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AUTHOR Calkins, Dick S.; And Others
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ABSTRACT

This study attempts to discover relationships between teacher classroom behaviors and pupil achievement. Observers rated thirty-two fifth-level teachers on the Global Rating Scales (GRS) and the Teacher Practices Observation Record (TPOR). The data were analyzed using a linear model in which classroom mean posttest math score was the criterion and predictors were pretest classroom mean math score, a teacher behavior score (mean), the teacher behavior score squared, the variance of the teacher behavior variable, and the variance of the teacher behavior variable squared. Results indicated that only a very small number of the teacher observation variables accounted for a significant amount of variance in math achievement, probably within the boundaries of what is expected on the basis of chance. The lack of positive results can conceivably be due to one of five reasons: (1) teacher behavior is not related to pupil achievement; (2) the scaling method or (3) type of analysis is not sufficient for discovering such behavior relationships; (4) some teacher behaviors are related, but none were sampled in the investigation; or (5) the relationship is of a form in which pupil characteristics interact with teacher behaviors. Retrospectively, it was not surprising that the use of variance as a predictor of achievement produced fewer statistically significant results than the mean even though it was reasonable to expect that all were due to chance, because the sampling distribution of variance is not normally distributed. In addition, the scaling procedure utilized in this investigation for obtaining teacher means for the TPOR instrument was probably not conducive to the discovery of relationships between these variables and pupil achievement. The development of alternative scaling techniques that would produce normally distributed values for infrequently observed behaviors inherent in the TPOR and similar low inference instruments appears to be quite important when these variables are to be utilized in correlational investigations. (MJB)

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EVALUATION OF TEACHING PROJECT

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THE RESEARCH AND DEVELOPMENT CENTER FOR TEACHER EDUCATION • THE UNIVERSITY OF TEXAS AT AUSTIN

The *Evaluation of Teaching Project*—one of four projects at the Research and Development Center for Teacher Education—has as its mission to develop materials and strategies for teacher training, research and evaluation. The goals of the *Evaluation of Teaching Project* are to develop (1) a conceptual framework for the evaluation of teaching, (2) a sourcebook of validated teacher evaluation and research instruments, and (3) strategies for the evaluation of teacher trainee programs. These goals are being carried out with funds from the National Institute of Education.

In the process of meeting its objectives, the *Evaluation of Teaching Project* conducts systematic research in teacher behavior for the purpose of validating instruments and identifying characteristics of effective teaching. The following report describes one facet of this research. A complete listing of studies in this report series is available by writing to the Evaluation of Teaching Project, R&D Center for Teacher Education, University of Texas at Austin, 78712.

Relationships Between Pupil Achievement and Characteristics of Observed Teacher Behavior Distributions

Dick S. Calkins, Robert C. Godbout

Lee H. Poynor, and C. L. Kugle

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Relationships Between Pupil Achievement and Characteristics of Observed Teacher Behavior Distributions

Dick S. Calkins, Robert C. Godbout, Lee H. Poynor, and C. L. Kugle

Discovery of relationships between the behavior exhibited in the classroom by the teacher and the scores students achieve on tests is considered to be a highly desirable endeavor which has potential as a basis for a "science of teaching." Unfortunately, even though attempts to discover such relationships have been occurring for more than 60 years, no clear relationships of this type with any real importance to education have been discovered (Heath & Nielson, 1974). Because of the intuitive appeal and the importance of this area, the Evaluation of Teaching Project (EOTP) was funded by the National Institute of Education to explore methodological issues and problems relevant to teacher behavior research. To this end the present investigation represents an attempt to discover relationships between teacher behavior and student achievement by utilizing information inherent in teacher observation techniques which has not been used in past studies and to present a discussion of the methodological problems encountered while utilizing this information.

Previously, quantification of teacher behavior for investigations of possible relationships with student achievement has been accomplished by utilizing the mean of the distribution of several assessments of that behavior. It can be recognized that this mean is an estimate of the population mean of all possible observations of that teacher in that situation. Berliner (1974) and Flanders (1970) question whether an average rating of a behavior which shows as much variation as the behavior exhibited by a teacher in a classroom can be representative of that behavior. Berliner (1974) suggests that the variation of the distribution of ratings of observed teacher behavior might be an

important predictor of student achievement, a predictor which in this form apparently has not been previously utilized. Such a statistic would represent an estimate of the population variance of the behavior being observed for the particular teacher.

It is reasonable that the variability or consistency of a teacher's behavior should be reflected in the performance of the students. The use of this variable in different guises has previously occurred. Teacher variability has been investigated as separately measured variables labeled "flexibility" and "use of variety during classroom intruction."

Within the latter context investigators have examined the variety of teacher aids and instructional materials employed (Anthony, 1967), the resource materials and extra learning facilities offered by the school (Torrance & Parent, 1966), and the teachers' tendency to pursue new and unexpected topics or make changes in the way materials are presented (Solomon, Bezdek, & Rosenberg, 1963). Of these investigations, the first two reported significant relationships between the measure of variety and student achievement. However, in their evaluation of the research into performance-based teacher education, Heath and Nielson (1974) judged the operational definition of variability used by Torrance and Parent (1966) to be invalid. Additional investigations which may be included in this context are those which have examined teachers' verbosity or frequency of verbal output (Thompson & Bowers, 1968), the teachers' relative emphasis on different logical processes during instruction (Furst, 1967), and variety of resource materials and student activities outside the classroom (Walberg, 1969). Although significant relationships were reported by Furst (1967) and Walberg (1969), the operational definitions of variability employed in all three of these studies have been judged by Heath and Nielson (1974) to have insufficient validity.

The second approach to studying variation of teacher behavior has used flexibility as the relevant definition. Whether measured by an "Inflexible-Adaptive" adjective checklist (Fortune, 1967), Flanders' Interaction Analysis Matrix (Flanders, 1970; Soar, 1966), or a talley of the number of times a teacher changes behavior in a given time interval (Vorreyer, 1967), no significant relationships with student growth were discovered.

The problems of operational definition and lack of statistical significance are only two of several involved in the past attempts to discover relationships between variability of teacher behavior and student achievement. The adoption of a definition of variability of teacher behavior as the variance of the distribution of values of observed teacher behavior has the double advantage of being a by-product of the process of obtaining the average rating and of being less global than "flexibility" or "use of variety during classroom instruction" since the statistical definition specifically relates to the particular teacher behavior being observed.

In order to include even more information inherent in the distribution of teacher behavioral observation values, the intent of this study was to investigate the linear and quadratic contribution of the mean and the variance of the distribution, and the product interactions between these variables as predictors of student achievement. However, the investigation of the interactions became too cumbersome and was abandoned.

Procedure

Data for this investigation were collected by the Evaluation of Teaching Project in the Austin Independent School District (AISD), Austin, Texas, during the fall of 1974 and spring of 1975 in 32 predominantly middle-class fifth-grade classrooms. Pupil achievement data from approximately 950 students were collected pre- and post-instruction in the subject areas of math and social studies. These data were collected utilizing project-designed instruments

consisting of AISD curriculum guide-referenced materials containing several subscales. Teacher classroom behavior was quantified utilizing the Global Rating Scales, a high-inference instrument, and the Teacher Practices Observation Record (TPOR), a low-inference instrument. Data were also obtained on pupil affective and attitudinal information regarding their teachers and the content presented them in math and social studies. However, since the present investigation utilized only the teacher behavior measures and the math data collected in the spring, only descriptions of these instruments will be included in this report. More detailed descriptions of the sample selection process, data collection procedures and the instruments used can be found in Poynor and Wetherold (1976) and Wetherold and Poynor (1976).

Instruments

The instrument utilized to measure achievement for this investigation (referred to as Math II in Poynor and Wetherold, 1976) consists of 33 multiple-choice items designed to assess student progress over the semester in six content areas likely to be covered during the spring semester. These content areas were selected by EOTP staff in conjunction with an AISD curriculum consultant to determine the content areas and particular skills or objectives with which most teachers and pupils in the district would be concerned during the semester.

Scoring of the pre- and post-instruction administration of this instrument was accomplished by right-wrong scoring of each item followed by summing the number of correct items per subscale to obtain subscale and total scores for each pupil. Then a pretest and posttest mean for each classroom was obtained from the data of students in the classroom who had both pre- and posttest data. Table 1 shows the internal consistency reliability (coefficient alpha), name,

number of items, mean, and standard deviation for the six subscales for pre- and posttest computed for classroom means. (All tables appear at the end of the text.)

The Teacher Practices Observation Record (TPOR) is an instrument developed by Brown (1968) for systematic recording of a teacher's methods of instruction. Incorporating John Dewey's educational philosophy of experimentalism, the 62 items are listed in dichotomous pairs. Even-numbered items represent teacher behaviors corresponding to Dewey's philosophy and odd-numbered items reflect more traditional instructional methods. Although the item pairs are considered dichotomies, a teacher may demonstrate both paired behaviors within an observation period.

Seven areas of teacher behavior are identified on the instrument as follows:

(1) nature of the situation (the focus in the classroom, i.e., teacher/thing-focused vs. pupil-focused);

(2) nature of the problem (the teacher's approach to teaching the subject matter, i.e., teacher/textbook-centered vs. student-centered);

(3) development of ideas (teacher behaviors governing cognitive processes in the classroom, i.e., teacher's discouragement of student's suggestions and hypotheses vs. teacher's encouragement of students' ideas);

(4) use of subject matter (the role the teacher gives the subject matter, i.e., teacher/textbook as source of information vs. student involvement in information gathering and presentation);

(5) evaluation (teacher evaluative methods, i.e., teacher or external evaluation vs. internal or pupil self-evaluation);

(6) differentiation (individualization within the classroom, i.e., teacher instruction and evaluation of all students in the same manner vs. teacher differentiation among students based on student abilities and interests);

(7) motivation, control (teacher's methods of motivation and control, i.e., teacher as source of reward and control vs. inherent value as reward and student self-control).

Observers for the Evaluation of Teaching Project used the TPOR to record teacher behaviors as they occurred in six 5-minute segments of an observation session. Coders were instructed to observe a teacher for 5 minutes, use another minute to check those behaviors that had occurred in the previous 5 minutes, and then begin another timed observation segment.

The Global Rating Scales (GRS) instrument is a high-inference, global rating observation system designed to identify and quantify those teacher classroom behaviors indicated by previous research to be correlated with pupil gain. This instrument was developed by the EOTP staff and based on the review of research studies by Rosenshine (1971) relating teacher behavior to pupil achievement. The version of the GRS utilized in this study contained 11 one-item scales. These 11 scales, the responses for each scale, and the relevant 5-point rating scale are shown in Figure 1.

TPOR and GRS data were obtained during the spring semester in three observation sessions of math instruction. For the TPOR, each observation session consisted of six 5-minute segments. For the GRS, each teacher was rated on each item at the conclusion of every full TPOR observation session. Thus, each observation session resulted in six binary data for each of the 62 items on the TPOR and a single rating on a 5-point scale for each scale on the GRS for each classroom.

Data for the GRS were processed by obtaining a mean and a variance for each scale for each teacher by collapsing the data across observations. Thus, each mean and variance summarized the distribution of three ratings for a particular teacher.

In a similar manner, the data for the TPOR were also reduced to two descriptive indices for each teacher for each of the 62 items. The two scores obtained for each behavioral item were estimates of the frequency of

(1) Amount of criticism (1 = high, 5 = low)--This scale is used to record the amount of critical behavior displayed by the teacher. Criticism, as defined for this instrument, refers to the verbal and nonverbal behaviors a teacher uses in finding fault with and attempting to correct student cognitive processes and/or behavior.

(2) Criticism (1 = personal, 5 = general)--A personal style of criticism is characterized as being directed toward a specific individual or toward a discrete and easily identifiable small group. General criticism is directed toward the class in general or toward a group addressed collectively, with the identity of individuals being observed and subsumed within the class or group.

(3) Criticism (1 = kind, 5 = harsh)--Kind teacher criticism is defined as being supportive and considerate, achieving a positive effect. Harsh criticism has undertones of hostility, anger, and/or ridicule, producing a negative effect.

(4) Warmth (1 = warm, 5 = cold)--A warm teacher is defined as considerate, kind, friendly, and humanistic, while a cold teacher is one who maintains a distance between herself/himself and the students, and who demonstrates little personal interest in students outside the teaching role.

(5) Enthusiasm (1 = enthusiastic, 5 = apathetic)--An enthusiastic teacher demonstrates interest in the subject matter, the learning process, and student involvement in that process. On the other end of the scale, the apathetic teacher appears uninterested and uninvolved.

(6) Classroom environment (1 = high quality, 5 = low quality)--This rating of classroom environment is based on a teacher's creation and use of the teaching/learning environment. In a high-quality environment, the physical setting reinforces learning through relevant displays, flexible seating arrangements, and incorporation of students' contributions. A low-quality environment is one which fails to include the above factors to create a favorable, stimulating learning situation.

(7) Task orientation (1 = focused, 5 = unfocused)--On this scale, the degree to which a teacher works toward learning objectives in lesson presentation and in supervision of student work periods is placed on a continuum from focused to unfocused. Focused task orientation is characterized by well-planned and well-paced class activities, focused discussion periods, and efficient procedural activities. Unfocused task orientation is evident in wandering discussions, disorganized presentation of lesson content, lengthy procedures, and unproductive class activity.

(8) Clarity (1 = high, 5 = low)--Here, teacher clarity refers to a teacher's ability to communicate at the students' level of comprehension. Indicators that a teacher is understood by students are found in student reactions to the teacher as well as in the teacher's behavior. A high rating applies to a teacher who provides examples and whose students react to lesson presentation and teacher instructions with behavior indicating their comprehension. Other than the absence of the above characteristics of teacher clarity, indicators of low clarity are students' bewilderment, repetitious questions and frequent incorrect responses, along with vague or evasive teacher responses.

Figure 1. The 11 Items of the Global Rating Scales (GRS) Instrument

(continued)

(9) Structuring (1 = high, 5 = low)--A teacher evidences high structuring of content with smooth, well-planned lesson presentation and classroom activities, and by including introductory comments, summaries and reviews. Disorganized structuring is indicated by disorganized presentation of material and by classroom activities in which learning objectives are not apparent.

(10) Variety of methods (1 = high, 5 = low)--This scale reflects the degree to which a teacher varies instructional modes.

(11) Cognitive varitey (1 = high, 5 = low)--This scale indicates the degree to which a teacher facilitates movement from one cognitive level to another by varying types of questions and activities.

Figure 1 (continued). The 11 Items of the Global Rating Scales (GRS) Instrument.

the behavior and the variation or consistency of the behavior. The estimate of the frequency of the behavior was the mean of the binary scores for the 18 5-minute observation segments, and the estimate of the variation or consistency of the behavior was the variance of the three means of the full TPOR observation sessions (with the means of the six 5-minute sessions making up the mean score of one observational period). The estimate of the variation of the behavior was calculated as the variance of the means of the three full observation periods instead of the variance across the 18 observations because the latter variance calculated from binary data would be highly correlated with the mean.*

Training procedures for the classroom observers of the TPOR and GRS are presented in Poynor and Wetherold (1976). This report also contains the inter-observer reliabilities for the TPOR and GRS determined on the training data. These reliabilities are reasonably high. As an example, the average percent agreement of the observers with an expert after viewing two 20-minute videotaped lessons taught by student teachers were 82.5% and 85.6% for the TPOR and 76.6% and 70.1% for the GRS in separate reliability checks.

Statistical Procedure

Since this investigation was conducted in a natural setting and involved no experimental manipulations, a correlational approach to the analysis of the data was utilized. In addition, since there were many sources of variation to be isolated, it was necessary to utilize a multiple independent variable correlational technique. The strategy behind the use of multiple correlation

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*Analyses were originally performed utilizing the variance calculated from the 18 binary scores of the 5-minute observation sessions. However, since the mean and variance of a binary distribution are highly correlated, the problem of multicolinearity resulted, disrupting the analyses. Mutlicolinearity is discussed in the Statistical Procedure section.

in this investigation was to examine the portions of variance in achievement which can be attributed to or predicted by various independent variables. In a multiple correlational context this consists of determining the likelihood that the weighting coefficients for the various independent variables in a particular linear model in which achievement is the criterion are the result of sampling variation when the population values are zero. If a particular coefficient appears to be a random fluctuation from a population value of zero, that independent variable is said to not account for any variance in achievement. And, on the other hand, if a particular coefficient appears to be a random fluctuation from a population value which is not zero, that independent variable is said to account for variation in achievement and to be related to achievement although the specific degree of relationship remains unknown.

In the discussion of the use of multiple correlation, it has been stated that for this investigation the criterion or dependent variable is achievement. Such use of the term achievement implies some assessment of student progress during the course of instruction and more specifically as change in performance which in this case was assessed as a function of the pre- and posttest scores. The operational definition of achievement which was adopted from Werts and Linn (1970) for use in this study is reflected in the linear model chosen for analysis of the data. In this linear model, posttest score is the criterion and pretest score becomes an additional independent variable (or covariable). The implication of including pretest score as a covariable in the model is that the weights of the independent variables reflect the amount of change in performance (i.e., post-performance not predictable from pre-performance) that can be attributed to the relevant independent variable.

As indicated previously, the principal independent variables investigated are several characteristics of the distribution of observed teacher behavior.

These are the mean, the squared mean, the variance, and the squared variance of the distribution of observed behavior of one teacher. The teacher was chosen as the unit of analysis for this investigation for the following reasons: (1) to focus on the behavior of the teacher, since this behavior is the primary concern of the investigation; (2) to avoid possible disruption of statistical procedures due to non-independence of nested units of analysis which could occur if student was the unit of analysis; and (3) to use the more reliable measures of the variables (classroom means rather than student scores) in order to avoid the necessity of correcting the independent variables for unreliability.

The data analysis for this investigation was conducted utilizing an adapted version of a multiple regression program written by Jennings (shown in Ward & Jennings, 1973) and the CDC 6600 computer system at The University of Texas at Austin. An alpha value of .05 was chosen for rejecting null hypotheses.

The original plan for the analysis for this investigation involved a set of linear models which would permit an exhaustive examination of characteristics of the distribution of teacher behavior as predictors of student achivement. Such models would include as independent variables the characteristics of the first four moments of the distribution of observed teacher behavior (the mean, the variance, the skewness, and the kurtosis) and the product interaction between these terms and between these terms and the pretest. However, since teacher is the unit of analysis and data were obtained for 32 teachers, the use of such models which have a large number of independent variables would cause overfitting of the model to the data, and such overfitting would lead to unstable regression weights. Thus, the exhaustive data analysis plan was abandoned.

A more reasonable plan for the analysis was to use the following model.

$$Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + a_6X_1X_2 + a_7X_1X_3 + a_8X_1X_4 + a_9X_1X_5 + e$$

where Y = posttest math score,

X_1 = pretest math score,

X_2 = the mean of the distribution of observed behavior for one teacher,

X_3 = X_2 squared,

X_4 = the variance of the distribution of observed behavior for one teacher,

X_5 = X_4 squared,

a_0 through a_9 = least-squared regression coefficients,

e = the error inherent in the use of this model.

The predictor variables in this model which contain a pair of X terms indicate that those independent variables are composed of the product of the X terms designated. The regression weights for these product terms reflect the variance in achievement accounted for by the joint contribution or interaction of the terms occuring in the product.

However, even the use of this model became infeasible because of the high degree of correlation among the product terms. Such high correlations between independent variables of a model, called multicolinearity, result in a condition of instability in the calculation of the regression weights by conventional iterative techniques. In this case, the problem was manifest as negative F- ratios which occured while testing hypotheses concerning the values of the product term regression weights. This anomaly occured even though a very accurate double precision iterative routine with a small iteration tolerance was used to obtain solutions for the weights on the CDC 6600 computer system which has a double precision accuracy of 29 decimal digits. (This problem could probably have been circumvented by utilizing a computing algorithm to produce exact values for the weights instead of approximation. However, this would have been much more trouble and costly than the unproductive preliminary results from this model appeared to warrant.) Hence, the model was again reduced by dropping all product

terms.

The model on which the data analysis for this investigation was actually based was:

$$Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + e \qquad [1]$$

where all the terms are defined as they were previously. Null hypotheses that a_2 through a_5 were equal to zero for the population were tested utilizing the backward elimination procedure. In this procedure, the null hypothesis that a_5 equals zero was tested utilizing Model [1] as a full model and restricting a_5 to be zero. Then the decision to accept or reject the null hypothesis was made on the basis of an F statistic which is a function of the multiple correlation in the full and restricted model. The form of the F statistic is

$$F = \frac{(RSF - RSR)/df_1}{(1-RSF)/df_2}$$

where RSF = the squared multiple correlation from the full model,

RSR = the squared multiple correlation from the restricted model,

df_1 = a number representing numerator degrees of freedom which is the number of linearly independent predictors in the full model minus the number of linearly independent predictors in the restricted model,

df_2 = a number representing denominator degrees of freedom which is the number of subjects in the sample minus the number of linearly independent predictors in the full model.

Null hypotheses involving a_4 were tested utilizing a full model in which a_5 was zero; null hypotheses involving a_3 were tested utilizing a full model in which a_4 and a_5 were zero; and null hypotheses involving a_2 were tested utilizing a full model in which a_3, a_4 and a_5 were zero.

Results

The results of this investigation are presented in Tables 1 through 31. Tables 1, 2 and 3 show descriptive statistics for the variables utilized in the multiple correlational models. Table 1 presents the values of the mean, standard deviation and range for the math scores for the 32 classrooms. Table 2 shows the values for the mean, standard deviation, range, skewness, and kurtosis for the mean teacher observations for the 11 GRS scales. Table 2 also shows the values for the mean, standard deviation and range for the variance of the teacher observations for the 11 GRS scales. (The values of skewness and kurtosis for the variance are shown even though these statistics are appropriate only for situations in which variables are thought to be normally distributed. The sampling distribution of the variance is known to be distributed other than normal.) Table 3 shows values for the mean, standard deviation, range, skewness, and kurtosis for the mean teacher observations for the 62 TPOR scales. Table 3 also shows the values for the mean, standard deviation, range, skewness, and kurtosis for the variance of teacher observations for the 62 TPOR scales.

Consideration of Table 2 reveals that the GRS means are in general normally distributed with ranges of values sufficient to ensure that correlations of these variables with normally distributed variables should be undistorted. However, consideration of the means for the TPOR instrument in Table 3 reveals that restriction of range and/or non-normal distribution shape occurs for most of the TPOR variables. The reason for the low value of the mean, the lack of normality, and the restricted range of many of the TPOR items is probably due to the low frequency of occurance of the behavior being observed. Tables 2 and 3 also indicate that as expected the variance values for the GRS and TPOR variables are not normally distributed. This can be seen by the high values of skewness and kurtosis and the accompanying low probabilities which show that it is

unlikely that these values were obtained by random sampling from normally distributed populations.

Tables 4 through 11 contain the results of the attempt to relate classroom math posttest means with GRS means and squared means using the relevant classroom pretest math mean as a covariable. Tables 12 through 17 contain the results of the attempts to relate the seven classroom math posttest means with the GRS variances and squared variances using the relevant classroom math pretest mean, and GRS mean and squared GRS means as covariables. Tables 18 through 24 contain the results of the attempts to relate the seven classroom math posttest means with TPOR means and squared TPOR means using the relevant classroom math pretest mean as a covariable. Tables 25 through 31 contain the results of the attempts to predict the seven classroom math posttest means with the TPOR variance and squared TPOR variance using the relevant classroom math pretest mean, TPOR mean and squared mean as covariables.

Interpretation of Tables 4 through 31 may be facilitated by noting the following definitions of acronyms used in these tables. RSF indicates the squared multiple correlation for the fullest or most complete model. RSR implies the squared multiple correlation for the restricted model, i.e., the model which assumes a particular null hypothesis is true, in this case that particular regression weights are equal to zero. RSD implies the algebric difference between RSF and RSR. An asterisk to the right of a probability denotes that probability is less than .05.

It can be noted that in 6 of 77 analyses, GRS means are significantly related to the math subscales; that in 1 of the 77 analyses, GRS squared means are significantly related to the math scales; that in three of 77 analyses, GRS variances are related significantly to the math scales; and that in 2 of 77 analyses, GRS squared variances are related significantly to the math scales.

In addition, it can be noted that in 28 of the 434 analyses, TPOR means are related significantly to the math scales; that in 12 of the 434 analyses, TPOR squared means are significantly related to the math scales; that in 7 of the 434 analyses, TPOR variances are significantly related to the math scales; and that in 12 of the 434 analyses, squared TPOR variances are significantly related to the math scales.

Since the number of statistically significant relationships is so low, it is probably unwise to interpret these results as evidence of "real" relationships, as they could conceivably all be Type I errors. In fact, for the 77 analyses involving the GRS for one class of independent variables and for $\alpha = .05$, about four (.05 x 77) Type I errors are expected, and for each set of 434 tests involving the TPOR, about 22 Type I errors are expected. Consideration of the results of the GRS for the four classes of independent variables indicates that only for the analyses involving the mean are the observed number of significant relationships greater than the expected number. Similarly for the TPOR, only for the analyses involving the mean are the observed number of significant relationships greater than the expected number.

Further, if the results of the 77 tests of null hypotheses for the mean GRS and the results of the 434 tests of the null hypotheses for the mean TPOR are viewed as samples from populations in which the null hypothesis is true for every member, it can be seen that the number of significant relationships will vary as a result of chance (Godbout, 1975). Hence, it may be expeditious to establish a confidence band extending above the expected number of chance significant results when the number of obtained significant relationships is near the number expected on the basis of chance. In this case, if the number of obtained significant relationships is not greater than the upper limit of the confidence band it would seem appropriate to decide that all the observed

significant relationships are Type I errors.

Utilizing the binomial distribution with $p = .05$ and $q = .95$, the upper limit of the 95% confidence band for samples of size 77 is 8 and for samples of size 434, 31 is the upper limit. Since the number of significant relationships for the GRS mean is 6 and the TPOR mean is 28 and since these numbers are less than 8 and 31, respectively, it is difficult to conclude that the results are different than would be obtained on the basis of chance. Hence, this investigation failed to discover any relationships between teacher behavior and student achievement, as measured by the previously described instruments.

Conclusions

This study represents an attempt to discover relationships between teacher classroom behaviors and pupil achievement. Trained observers rated 32 fifth-level teachers on the 11-item Global Rating Scales (GRS) and the Teacher Practices Observation Record (TPOR), composed of 62 items descriptive of possible teacher behaviors. Thus, the study used 73 measures of teacher classroom behavior. The pupil achievement measures were pre- and posttest scores on a seven-scale mathematics test. Since past investigations of this type have produced sparse results, novel distributional characteristics of the teacher behavior data were employed in the analysis.

The data were analyzed using a linear model in which classroom mean posttest math score was the criterion and predictors were pretest classroom mean math score, a teacher behavior score (mean), the teacher behavior score squared, the variance of the teacher behavior variable, and the variance of the teacher behavior variable squared. Such a model permits one to determine the variance in posttest math accounted for by the various distributional aspects of teacher behavior variables with the contribution of pretest math

effectively held constant.

The results of this study indicated that only a very small number of the teacher observation variables accounted for a significant amount of variance in math achievement. In fact, the number of these significant results is probably within the boundaries of what is expected on the basis of chance. Thus, for this study, the task of discovering relationships between teacher classroom behavior and pupil achievement must be considered unaccomplished.

The lack of positive results from this study can conceivably be due to one of five reasons. First, it is possible that teacher classroom behavior is not related to pupil achievement. Second and third, it is possible that teacher classroom behavior is related to pupil achievement, but the scaling method utilized for quantifying teacher behavior or the type of analysis utilized in this investigation are not sufficient for discovering such relationships. Fourth, it is possible that some teacher classroom behaviors are related to pupil achievement, but that none of these were sampled in this investigation. If this is the case, relationships between teacher behavior and pupil achievement will be discovered when the corrent dimensions of teacher behavior are selected. Finally, it is possible that teacher classroom behavior is related to pupil achivement, but the relationship is of a form in which pupil characteristics (attitudes, aptitudes, or personality variables) interact with teacher behaviors.

Retrospectively, it is not surprising that the use of variance as a predictor of achievement produces fewer statistically significant results than the mean even though it is reasonable to expect that all were due to chance. This is because the sampling distribution of variance is not normally distributed. Bivariate correlations obtained from variables which are not distributed bivariate normal are restricted in magnitude (McNemar, 1969; Calkins, 1974). For example, the maximum possible bivariate correlation may be .6 for variables

which are not distributed bivariate normal rather than the maximum possible value of 1.0 for variables which are distributed bivariate normal. Thus the non-normal sampling distribution of variance may be a limiting factor in its use as an effective predictor.

In addition the scaling procedure utilized in this investigation for obtaining teacher means for the TPOR instrument was probably not conducive to the discovery of relationships between these variables and pupil achievement. Evidence of a scaling problem is provided by the fact that the majority of the distributions of the TPOR means produced by this scaling procedure are non-normal and restricted in range. This situation is probably due to the composition of the TPOR, a low inference instrument which includes potential teacher behaviors which in actuality were infrequently observed. Since cumulation of behaviors was the quantification procedure utilized in this study, infrequently occuring behaviors produced many variables with values of zero and led to positively skewed distributions with narrow ranges of values. The development of alternative scaling techniques which would produce normally distributed values for infrequently observed behaviors inherent in the TPOR and similar low inference instruments would appear to be quite important when these variables are to be utilized in correlational investigations.

As a final point, Rosenshine and Furst (1971) indicated that opportunity for individual pupils to learn the material covered by the achievement tests utilized is an often neglected but potentially important variable in teacher effectiveness research. Although opportunity to learn was not a variable considered in this study, it has been extensively treated in another Evaluation of Teaching Project report by Kugle and Calkins (1976). As part of this investigation of the variable "opportunity for students to learn", essentially the same analyses were performed as those in the present one except that GRS

was the only teacher observation instrument utilized and only students who were reported to have had the opportunity to learn were included. The results reported by Kugle and Calkins were essentially the same as for this investigation.

Table 1

Math Pre- and Posttest Means, Standard Deviations, and Alpha Reliability Coefficients for Subscales and Total Scale, Computed from Classroom Item Means (N = 32 Classrooms Totaling 607 Students)

		Basic Multiplication		Factors and Prime Numbers		Basic Division		Basic Fractions		Measurement, (Time, Weight, Etc.)		Geometry		Total Scale	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Number of Items		5	5	4	4	7	7	3	3	5	5	9	9	33	33
Subscale $\bar{X}$		2.69	3.30	1.03	1.50	2.28	2.99	.87	1.22	3.06	3.52	3.41	4.22	13.33	16.75
Subscale S.D.		.78	.54	.30	.49	.54	.78	.21	.48	.39	.40	.91	.78	2.41	2.93
Alpha Coefficient		.86	.78	.24	.70	.55	.79	.00	.80	.61	.58	.83	.76	.89	.93
Range	Low	.78	2.11	.52	.27	1.21	1.67	.50	.57	1.88	2.42	1.56	2.83	9.69	11.84
	High	4.27	4.20	1.91	2.36	3.33	4.64	1.38	2.11	3.86	4.50	5.09	5.67	17.62	22.09

Table 2

Descriptive Statistics for the Mean and Variance of the Global Rating Scales

Based on Observations of 32 Teachers

GRS	Mean								Variance							
	Mean	Standard Deviation	Range		Skewness		Kurtosis		Mean	Standard Deviation	Range		Skewness		Kurtosis	
			Low	High	Value	Probability	Value	Probability			Low	High	Value	Probability	Value	Probability
1	3.64	1.06	1.67	5.99	-.35	.72	-1.48	.14	1.31	1.80	0.00	8.33	5.61	.00	6.69	.00
2	3.64	.86	2.00	5.00	-.19	.84	-.77	.44	1.71	1.88	0.00	8.33	3.94	.00	3.43	.00
3	2.38	.88	1.00	4.33	-.31	.75	-.69	.50	.71	.73	0.00	2.33	1.98	.04	-.26	.79
4	2.38	.86	1.00	4.67	.33	.74	.14	.88	.40	.38	0.00	1.33	2.74	.01	.61	.55
5	2.54	.63	1.33	3.67	-.22	.82	-.70	.49	.47	.54	0.00	2.33	3.87	.00	2.91	.00
6	2.41	.99	1.00	4.67	1.08	.28	-.95	.34	.53	.59	0.00	3.00	5.49	.00	7.84	.00
7	1.93	.53	1.00	3.00	-.93	.35	-.57	.57	.44	.54	0.00	2.33	3.80	.00	3.14	.00
8	2.09	.72	1.00	3.76	.18	.85	-1.22	.22	.44	.43	0.00	1.33	2.50	.01	-.07	.94
9	2.23	.77	1.00	3.33	-.58	.56	-1.28	.20	.72	.81	0.00	3.00	2.90	.00	.73	.47
10	2.89	.91	1.00	5.00	.32	.74	-.36	.72	1.04	1.39	0.00	7.00	5.95	.00	9.24	.00
11	2.47	.89	1.00	4.00	-.44	.66	-1.21	.22	.62	.62	0.00	2.33	3.02	.00	1.32	.18

Table 3

Descriptive Statistics for the Mean and Variance of the Teacher Practices Observation Record

Based on Observations of 32 Teachers

TP OR	Mean								Variance							
	Mean	Standard Deviation	Range		Skewness		Kurtosis		Mean	Standard Deviation	Range		Skewness		Kurtosis	
			Low	High	Value	Probability	Value	Probability			Low	High	Value	Probability	Value	Probability
1	3.59	1.44	.67	5.67	- .91	.37	- 1.03	.37	2.70	2.86	.33	10.33	3.10	.00	.86	.39
2	.15	.35	0	1.67	6.95	.00	10.42	.00	.44	1.53	0	8.33	10.31	.00	22.68	.00
3	4.42	1.61	1.33	6.00	-1.22	.22	- 1.43	.15	2.68	3.44	0	12.00	3.10	.00	1.10	.27
4	.89	1.13	0	3.67	2.26	.02	- .32	.74	1.97	2.96	0	12.00	3.93	.00	2.78	.01
5	2.70	1.51	0	6.00	.84	.41	- .47	.64	2.85	3.14	0	12.00	2.62	.01	.50	.62
6	.52	.78	0	2.67	3.22	.00	.89	.38	1.41	2.55	0	12.00	5.90	.00	8.18	.00
7	.39	.43	0	1.33	1.68	.09	- .86	.39	.51	.64	0	2.33	2.25	.02	- .13	.89
8	.17	.50	0	2.67	3.37	.00	19.42	.00	.15	.36	0	1.33	5.92	.00	5.98	.00
9	.10	.37	0	1.67	8.22	.00	12.87	.00	.16	.57	0	2.33	8.21	.00	12.44	.00
10	.98	1.38	0	5.33	3.89	.00	2.56	.01	2.07	3.35	0	12.00	4.16	.00	2.76	.01
11	5.42	.95	2.33	6.00	-4.05	.00	2.48	.01	1.68	3.03	0	10.33	3.94	.00	1.71	.08
12	.35	.71	0	2.67	4.57	.00	3.29	.00	1.21	2.48	0	9.33	4.32	.00	2.55	.01
13	.73	1.02	0	3.67	2.69	.01	.25	.80	1.85	3.28	0	12.00	4.18	.00	2.45	.01
14	2.03	1.30	0	4.67	- .34	.73	- 1.22	.22	3.04	3.04	0	10.33	1.93	.05	- .60	.55
15	.06	.24	0	1.33	10.61	.00	24.07	.00	.19	.99	0	5.33	12.30	.00	30.69	.00

Table 3 (continued-a)

Descriptive Statistics for the Mean and Variance of the Teacher Practices Observation Record

Based on Observations of 32 Teachers

TP OR	Mean								Variance							
	Mean	Standard Deviation	Range		Skewness		Kurtosis		Mean	Standard Deviation	Range		Skewness		Kurtosis	
			Low	High	Value	Probability	Value	Probability			Low	High	Value	Probability	Value	Probabilit
16	.18	.35	0	1.33	4.53	.00	3.12	.00	.47	1.16	0	5.33	6.71	.00	9.23	.00
17	.01	.06	0	.33	12.44	.00	31.21	.00	.01	.06	0	.33	12.44	.00	31.21	.00
18	.02	.08	0	.33	8.35	.00	12.78	.00	.02	.08	0	.33	8.35	.00	12.78	.00
19	2.28	1.96	0	5.33	.34	.73	- 1.71	.08	2.99	3.77	0	12.00	2.91	.00	.51	.62
20	.15	.39	0	2.00	8.44	.00	15.77	.00	.18	.55	0	3.00	10.15	.00	22.45	.00
21	3.19	1.61	0	6.00	- .35	.73	- .77	.45	3.98	3.71	0	12.00	1.71	.08	- .98	.33
22	.24	.46	0	1.67	4.35	.00	2.66	.01	.43	1.04	0	5.33	8.03	.00	14.79	.00
23	1.41	1.45	0	5.33	2.19	.03	- .02	.98	2.77	2.82	0	9.33	1.56	.12	- .90	.37
24	.16	.40	0	2.00	7.84	.00	13.74	.00	.30	.87	0	4.00	7.70	.00	11.64	.00
25	1.52	1.60	0	5.00	1.59	.11	- 1.04	.30	3.02	4.22	0	12.00	2.95	.00	- .01	.99
26	.38	.72	0	3.00	5.16	.00	5.19	.00	.85	1.81	0	7.00	5.11	.00	4 28	.00
27	.07	.23	0	1.00	6.98	.00	8.89	.00	.18	.60	0	3.00	8.46	.00	15.12	.00
28	0.	0.	0	0					0.	0.	0	0				
29	0.	0.	0	0					0.	0.	0	0				
30	.23	.39	0	1.33	4.04	.00	2.15	.03	.62	1.42	0	5.33	5.77	.00	5.77	.00

Table 3 (continued-b)

Descriptive Statistics for the Mean and Variance of the Teacher Practices Observation Record

Based on Observations of 32 Teachers

TP OR	Mean								Variance							
	Mean	Standard Deviation	Range		Skewness		Kurtosis		Mean	Standard Deviation	Range		Skewness		Kurtosis	
			Low	High	Value	Probability	Value	Probability			Low	High	Value	Probability	Value	Probability
31	2.42	1.79	0	6.00	1.80	.07	- .53	.60	3.77	3.88	0	12.00	1.85	.06	- .90	.00
32	1.22	1.40	0	4.33	1.32	.18	-1.37	.17	2.40	3.51	0	12.00	2.93	.00	.26	.79
33	1.49	1.51	0	6.00	3.14	.00	1.37	.17	2.50	3.12	0	12.00	3.55	.00	1.81	.07
34	1.83	1.46	0	4.00	1.01	.31	-1.68	.09	3.16	4.08	0	12.00	2.26	.02	- .57	.58
35	2.67	1.71	0	6.00	.63	.54	-1.11	.27	4.20	4.20	0	12.00	1.75	.08	- 1.18	.24
36	1.10	1.45	0	5.67	3.17	.00	1.49	.13	3.09	4.48	0	12.00	2.61	.01	- .49	.63
37	0.	0.	0	0					0.	0.	0	0				
38	1.56	1.62	0	5.00	1.62	.10	-1.13	.26	2.12	2.98	0	9.33	3.07	.00	.26	.79
39	.02	.08	0	.33	8.35	.00	12.78	.00	.02	.08	0	3.33	8.35	.00	12.78	.00
40	1.20	1.86	0	5.67	2.91	.00	- .01	.98	1.04	2.37	0	10.33	6.61	.00	8.57	.00
41	1.94	1.44	0	5.33	2.23	.02	.27	.79	2.78	2.88	0	12.00	3.04	.00	1.50	.13
42	1.13	1.26	0	4.67	2.79	.01	.96	.34	2.32	2.65	0	9.00	2.19	.03	- .22	.82
43	.25	.66	0	3.00	7.45	.00	10.95	.00	.50	1.47	0	7.00	7.77	.00	12.23	.00
44	.08	.19	0	.67	4.96	.00	3.97	.00	.13	.33	0	1.33	7.01	.00	9.44	.00
45	1.31	1.53	0	6.00	3.62	.00	2.55	.01	2.02	2.49	0	8.33	2.42	.01	- .21	.83
46	.72	1.11	0	4.33	3.87	.00	2.33	.02	1.45	2.73	0	10.33	4.91	.00	3.93	.00

Table 3 (continued-c)

Descriptive Statistics for the Mean and Variance of the Teacher Practices Observation Record

Based on Observations of 32 Teachers

TPOR	Mean								Variance							
	Mean	Standard Deviation	Range		Skewness		Kurtosis		Mean	Standard Deviation	Range		Skewness		Kurtosis	
			Low	High	Value	Probability	Value	Probability			Low	High	Value	Probability	Value	Probabilit
47	.25	.34	0	1.00	2.37	.02	- .42	.68	.51	.91	0	3.00	4.42	.00	2.79	.01
48	.45	.68	0	2.67	3.81	.00	2.44	.01	1.31	2.52	0	9.33	4.87	.00	3.67	.00
49	1.41	1.20	0	5.00	2.44	.01	1.09	.28	2.87	3.14	0	10.33	2.11	.03	-.63	.54
50	1.68	1.70	0	6.00	2.08	.04	-.24	.80	3.10	3.71	0	12.00	2.65	.01	.10	.92
51	4.73	1.62	0	6.00	-3.62	.00	1.83	.06	2.55	3.80	0	12.00	3.22	.00	.34	.73
52	1.09	1.65	0	6.00	3.94	.00	2.20	.03	2.15	3.67	0	12.00	3.79	.00	1.25	.21
53	4.81	1.29	2.00	6.00	-1.75	.07	- .90	.37	4.25	5.14	0	12.00	1.45	.14	-1.70	.09
54	.21	.67	0	3.33	8.33	.00	14.66	.00	.73	2.29	0	9.33	6.97	.00	8.67	.00
55	1.18	1.27	0	5.67	3.56	.00	3.20	.00	2.54	3.44	0	12.00	3.64	.00	1.70	.09
56	.35	.95	0	4.00	6.12	.00	6.82	.00	1.25	3.42	0	12.00	5.88	.00	5.51	.00
57	.45	1.09	0	5.67	8.31	.00	15.95	.00	.69	2.20	0	12.00	10.10	.00	22.19	.00
58	.59	1.16	0	4.33	5.03	.00	4.60	.00	1.33	2.73	0	12.00	5.72	.00	6.83	.00
59	4.17	2.13	0	6.00	-1.88	.06	- 1.01	.31	2.11	3.78	0	12.00	4.26	.00	2.18	.03
60	.41	.84	0	2.67	4.12	.00	1.71	.08	1.51	3.66	0	12.00	5.23	.00	4.05	.00
61	1.73	1.43	0	5.67	1.98	.04	.18	.85	1.58	1.81	0	7.00	3.68	.00	1.91	.05
62	.39	.86	0	3.67	5.43	.00	5.70	.00	1.41	3.18	0	12.00	5.05	.00	4.06	.00

TABLE 4

CONTRIBUTIONS OF THE GRS MEAN AND THE GRS SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 1 BASIC MULTIPLICATION

	MEAN						SQUARED MEAN					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.4744	.4596	.0148	.8175	1,29	.3734	.4985	.4744	.0241	1.3438	1,28	.2562
2	.4598	.4596	.0002	.0088	1,29	.9257	.4670	.4595	.0073	.3821	1,28	.5415
3	.4711	.4596	.0115	.6318	1,29	.4331	.4952	.4711	.0240	1.3324	1,28	.2581
4	.4639	.4596	.0043	.2329	1,29	.6330	.4729	.4639	.0089	.4750	1,28	.4964
5	.4682	.4596	.0086	.4681	1,29	.4993	.4924	.4682	.0242	1.3363	1,28	.2575
6	.5126	.4596	.0530	3.1515	1,29	.0864	.5396	.5126	.0270	1.6412	1,28	.2107
7	.4913	.4601	.0312	1.7170	1,29	.2007	.4913	.4601	.0312	1.7170	1,28	.2007
8	.4875	.4596	.0279	1.5773	1,29	.2192	.5348	.4875	.0473	2.8468	1,28	.1027
9	.4690	.4596	.0094	.5148	1,29	.4788	.4691	.4690	.0001	.0029	1,28	.9576
10	.4716	.4596	.0120	.6570	1,29	.4242	.4751	.4716	.0035	.1866	1,28	.6691
11	.4602	.4596	.0005	.0294	1,29	.8650	.4646	.4602	.0045	.2332	1,28	.6329

TABLE 5

CONTRIBUTIONS OF THE GRS MEAN AND THE GRS SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 2 FACTORS AND PRIME NUMBERS

	MEAN						SQUARED MEAN					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.3403	.3366	.0037	.1619	1,29	.6904	.3408	.3403	.0006	.0247	1,28	.8762
2	.3367	.3366	.0002	.0076	1,29	.9311	.3579	.3367	.0212	.9233	1,28	.3448
3	.3465	.3366	.0099	.4388	1,29	.5129	.3960	.3465	.0496	2.2988	1,28	.1407
4	.3366	.3366	.0000	.0006	1,29	.9806	.3731	.3366	.0365	1.6301	1,28	.2122
5	.3386	.3366	.0021	.0906	1,29	.7655	.3696	.3386	.0310	1.3748	1,28	.2509
6	.4118	.3366	.0752	3.7089	1,29	.0640	.4320	.4118	.0202	.9947	1,28	.3271
7	.3518	.3366	.0152	.6806	1,29	.4161	.3840	.3518	.0322	1.4640	1,28	.2364
8	.3554	.3366	.0188	.8461	1,29	.3653	.3745	.3554	.0191	.8569	1,28	.3625
9	.3378	.3366	.0012	.0541	1,29	.8177	.3896	.3378	.0518	2.3769	1,28	.1344
10	.3466	.3366	.0101	.4470	1,29	.5091	.3511	.3466	.0045	.1924	1,28	.6643
11	.3406	.3366	.0041	.1791	1,29	.6753	.3464	.3406	.0057	.2460	1,28	.6238

TABLE 6

CONTRIBUTIONS OF THE GRS MEAN AND THE GRS SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 3 BASIC DIVISION

	MEAN						SQUARED MEAN					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.3666	.3568	.0099	.4513	1,29	.5071	.3826	.3666	.0160	.7264	1,28	.4013
2	.3884	.3568	.0317	1.5012	1,29	.2303	.3885	.3884	.0000	.0017	1,28	.9675
3	.3796	.3568	.0228	1.0678	1,29	.3100	.3830	.3796	.0034	.1527	1,28	.6989
4	.3569	.3568	.0002	.0084	1,29	.9275	.3574	.3569	.0005	.0202	1,28	.8881
5	.3568	.3568	.0000	.0006	1,29	.9812	.3779	.3568	.0211	.9509	1,28	.3379
6	.5324	.3568	.1756	10.8936	1,29	.0026*	.5342	.5324	.0018	.1078	1,28	.7451
7	.3766	.3568	.0198	.9214	1,29	.3451	.3766	.3766	.0001	.0025	1,28	.9608
8	.4783	.3568	.1215	6.7558	1,29	.0145*	.5443	.4783	.0660	4.0529	1,28	.0538
9	.3613	.3568	.0045	.2049	1,29	.6542	.3794	.3613	.0181	.8186	1,28	.3733
10	.4378	.3568	.0810	4.1805	1,29	.0501	.4517	.4378	.0139	.7085	1,28	.4071
11	.3987	.3568	.0419	2.0229	1,29	.1656	.4635	.3987	.0648	3.3836	1,28	.0765

TABLE 7

CONTRIBUTIONS OF THE GRS MEAN AND THE GRS SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 4 BASIC FRACTIONS

	MEAN						SQUARED MEAN					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.1531	.1484	.0046	.1590	1,29	.6930	.1800	.1531	.0269	.9185	1,28	.3461
2	.2141	.1484	.0657	2.4234	1,29	.1304	.2141	.2141	.0000	.0006	1,28	.9814
3	.2031	.1484	.0546	1.9884	1,29	.1691	.2871	.2031	.0849	3.3000	1,28	.0800
4	.1500	.1484	.0016	.0530	1,29	.8196	.1544	.1500	.0044	.1462	1,28	.7050
5	.1491	.1484	.0007	.0234	1,29	.8796	.1651	.1491	.0160	.5357	1,28	.4703
6	.3080	.1484	.1596	6.6904	1,29	.0150*	.3198	.3080	.0117	.4837	1,28	.4925
7	.2114	.1484	.0630	2.3161	1,29	.1389	.2274	.2114	.0160	.5813	1,28	.4522
8	.2911	.1484	.1427	5.8376	1,29	.0222*	.3061	.2911	.0150	.6047	1,28	.4433
9	.1852	.1484	.0368	1.3105	1,29	.2617	.1853	.1852	.0000	.0011	1,28	.9739
10	.2530	.1484	.1046	4.0615	1,29	.0532	.2579	.2530	.0048	.1822	1,28	.6727
11	.1975	.1484	.0490	1.7722	1,29	.1955	.2457	.1975	.0482	1.7895	1,28	.1918

TABLE 8

CONTRIBUTIONS OF THE GRS MEAN AND THE GRS SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 5 MEASUREMENT

	MEAN						SQUARED MEAN					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.2363	.2179	.0184	.6977	1,29	.4104	.2846	.2363	.0482	1.8881	1,28	.1803
2	.2286	.2179	.0107	.4004	1,29	.5318	.2922	.2286	.0636	2.5168	1,28	.1239
3	.2253	.2179	.0073	.2744	1,29	.6044	.2686	.2253	.0433	1.6579	1,28	.2084
4	.2381	.2179	.0202	.7690	1,29	.3877	.2856	.2381	.0474	1.8585	1,28	.1837
5	.2704	.2179	.0524	2.0843	1,29	.1595	.2739	.2704	.0035	.1358	1,28	.7153
6	.2320	.2179	.0141	.5326	1,29	.4714	.2554	.2320	.0233	.8778	1,28	.3568
7	.2230	.2179	.0050	.1878	1,29	.6679	.2239	.2230	.0010	.0347	1,28	.8537
8	.2195	.2179	.0015	.0561	1,29	.8144	.2405	.2190	.0211	.7766	1,28	.3857
9	.2589	.2179	.0409	1.6016	1,29	.2158	.2609	.2589	.0020	.0768	1,28	.7837
10	.2684	.2179	.0505	.2000	1,29	.1679	.3543	.2684	.0859	3.7257	1,28	.0638
11	.2550	.2179	.0371	1.4425	1,29	.2394	.2655	.2550	.0105	.4003	1,28	.5321

TABLE 9

CONTRIBUTIONS OF THE GRS MEAN AND THE GRS SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 6 GEOMETRY

	MEAN						SQUARED MEAN					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.4830	.4827	.0003	.0168	1,29	.8976	.4916	.4830	.0086	.4711	1,28	.4981
2	.4827	.4827	.0000	.0007	1,29	.9786	.4897	.4827	.0069	.3813	1,28	.5419
3	.4832	.4827	.0005	.0270	1,29	.8707	.4872	.4832	.0040	.2176	1,28	.6445
4	.4982	.4827	.0155	.8944	1,29	.3521	.5066	.4982	.0084	.4765	1,28	.4957
5	.4967	.4827	.0140	.8083	1,29	.3760	.4979	.4967	.0012	.0679	1,28	.7964
6	.4835	.4827	.0008	.0441	1,29	.8351	.4961	.4835	.0126	.7005	1,28	.4097
7	.5241	.4827	.0414	2.5218	1,29	.1231	.5288	.5241	.0047	.2783	1,28	.6020
8	.4987	.4827	.0160	.9270	1,29	.3436	.4989	.4987	.0002	.0112	1,28	.9164
9	.4892	.4827	.0066	.3721	1,29	.5466	.5696	.4892	.0803	5.2237	1,28	.0301*
10	.4981	.4827	.0154	.8896	1,29	.3534	.5026	.4981	.0046	.2565	1,28	.6165
11	.4918	.4827	.0091	.5213	1,29	.4761	.4995	.4918	.0076	.4271	1,28	.5187

TABLE 10

CONTRIBUTIONS OF THE GRS MEAN AND THE GRS SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 7 TOTAL

	MEAN						SQUARED MEAN					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.0685	.0682	.0003	.2283	1,29	.6364	.7050	.6845	.0205	1.9465	1,28	.1739
2	.0690	.0682	.0008	.7595	1,29	.3906	.6923	.6901	.0022	.1956	1,28	.6617
3	.0695	.0682	.0013	1.2415	1,29	.2743	.6995	.6951	.0044	.4133	1,28	.5255
4	.0683	.0682	.0001	.0645	1,29	.8013	.6843	.6827	.0016	.1375	1,28	.7135
5	.0682	.0682	.0000	.0237	1,29	.8787	.7046	.6823	.0223	2.1150	1,28	.1570
6	.0730	.0682	.0048	5.2022	1,29	.0301*	.7304	.7304	.0000	.0042	1,28	.9488
7	.0687	.0682	.0005	.4959	1,29	.4869	.6962	.6874	.0088	.8104	1,28	.3757
8	.0731	.0682	.0049	5.2421	1,29	.0295*	.7535	.7307	.0228	2.5946	1,28	.1184
9	.0682	.0682	.0000	.0321	1,29	.8591	.7085	.6824	.0262	2.5148	1,28	.1240
10	.0697	.0682	.0015	1.4570	1,29	.2372	.7010	.6972	.0038	.3577	1,28	.5546
11	.0694	.0682	.0012	1.1602	1,29	.2903	.6978	.6942	.0035	.3286	1,28	.5711

TABLE 11

CONTRIBUTIONS OF THE GRS VARIANCE AND THE GRS SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 1 BASIC MULTIPLICATION

	VARIANCE						SQUARED VARIANCE					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.5095	.4985	.0110	.6063	1,27	.4429	.5154	.5095	.0059	.3148	1,26	.5796
2	.5158	.4670	.0488	.2192	1,27	.1107	.5159	.5158	.0001	.0032	1,26	.9554
3	.4952	.4952	.0001	.0030	1,27	.9569	.5306	.4952	.0353	1.9576	1,26	.1736
4	.4769	.4729	.0040	.2065	1,27	.6531	.5198	.4769	.0429	2.3226	1,26	.1396
5	.4925	.4924	.0000	.0025	1,27	.9607	.5244	.4925	.0320	1.7471	1,26	.1978
6	.5418	.5396	.0023	.1335	1,27	.7177	.6035	.5418	.0616	4.0410	1,26	.0549
7	.4920	.4913	.0007	.0385	1,27	.8460	.5485	.4920	.0565	3.2518	1,26	.0829
8	.5592	.5348	.0244	1.4942	1,27	.2321	.6019	.5592	.0427	2.7871	1,26	.1070
9	.4703	.4691	.0012	.0634	1,27	.8032	.4780	.4703	.0076	.3797	1,26	.5431
10	.4778	.4751	.0027	.1388	1,27	.7124	.4988	.4778	.0211	1.0929	1,26	.3054
11	.4659	.4646	.0013	.0640	1,27	.8022	.5011	.4659	.0352	1.8333	1,26	.1874

TABLE 12

CONTRIBUTIONS OF THE GRS VARIANCE AND THE GRS SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 2 FACTORS AND PRIME NUMBERS

	VARIANCE						SQUARED VARIANCE					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.3584	.3408	.0176	.7414	1,27	.3968	.3664	.3584	.0079	.3253	1,26	.5733
2	.3984	.3579	.0405	1.8175	1,27	.1888	.3996	.3984	.0012	.0524	1,26	.8207
3	.4106	.3960	.0145	.6662	1,27	.4215	.4390	.4106	.0284	1.3160	1,26	.2618
4	.4498	.3731	.0768	3.7674	1,27	.0628	.4726	.4498	.0227	1.1198	1,26	.2997
5	.3774	.3696	.0078	.3369	1,27	.5664	.4065	.3774	.0291	1.2759	1,26	.2690
6	.4324	.4320	.0004	.0191	1,27	.8911	.4850	.4324	.0526	2.6548	1,26	.1153
7	.4018	.3840	.0178	.8057	1,27	.3773	.4101	.4018	.0083	.3653	1,26	.5508
8	.3970	.3745	.0225	1.0057	1,27	.3248	.3975	.3970	.0005	.0228	1,26	.8810
9	.3899	.3896	.0003	.0131	1,27	.9096	.4304	.3899	.0405	1.8501	1,26	.1854
10	.3513	.3511	.0002	.0076	1,27	.9312	.4262	.3513	.0749	3.3938	1,26	.0769
11	.4046	.3464	.0582	2.6392	1,27	.1159	.4166	.4046	.0120	1.5369	1,26	.4703

TABLE 13

CONTRIBUTIONS OF THE GRS VARIANCE AND THE GRS SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 3 BASIC DIVISION

	VARIANCE						SQUARED VARIANCE					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.3871	.3826	.0045	.1977	1,27	.6602	.4237	.3871	.0365	1.6482	1,26	.2105
2	.3979	.3885	.0094	.4230	1,27	.5210	.4077	.3979	.0099	.4326	1,26	.5165
3	.3840	.3830	.0011	.0470	1,27	.8299	.4267	.3840	.0426	1.9335	1,26	.1762
4	.3604	.3574	.0030	.1254	1,27	.7260	.4519	.3604	.0915	4.3422	1,26	.0471*
5	.3782	.3779	.0003	.0130	1,27	.9102	.3997	.3782	.0215	.9310	1,26	.3435
6	.5425	.5342	.0083	.4919	1,27	.4891	.5488	.5425	.0062	.3598	1,26	.5538
7	.3778	.3766	.0012	.0522	1,27	.8209	.3798	.3778	.0020	.0845	1,26	.7736
8	.5584	.5443	.0142	.8670	1,27	.3601	.6320	.5584	.0735	5.1962	1,26	.0311*
9	.3885	.3794	.0090	.3988	1,27	.5330	.3887	.3885	.0003	.0114	1,26	.9159
10	.4599	.4517	.0082	.4111	1,27	.5268	.4656	.4599	.0057	.2772	1,26	.6030
11	.4660	.4635	.0025	.1270	1,27	.7243	.4674	.4660	.0013	.0638	1,26	.8025

TABLE 14

CONTRIBUTIONS OF THE GRS VARIANCE AND THE GRS SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 4 BASIC FRACTIONS

	VARIANCE						SQUARED VARIANCE					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.1890	.1800	.0091	.3019	1,27	.5872	.1907	.1890	.0017	.0534	1,26	.8190
2	.2141	.2141	.0000	.0005	1,27	.9821	.2207	.2141	.0066	.2204	1,26	.6426
3	.3556	.2871	.0686	2.8731	1,27	.1016	.3909	.3556	.0353	1.5060	1,26	.2307
4	.1727	.1544	.0184	.5989	1,27	.4457	.2362	.1727	.0634	2.1593	1,26	.1537
5	.2084	.1651	.0434	1.4790	1,27	.2345	.2085	.2084	.0000	.0009	1,26	.9759
6	.3345	.3198	.0147	.5976	1,27	.4462	.3357	.3345	.0012	.0451	1,26	.8336
7	.2336	.2274	.0062	.2173	1,27	.6449	.2426	.2336	.0090	.3080	1,26	.5836
8	.3292	.3061	.0231	.9314	1,27	.3431	.3565	.3292	.0273	1.1028	1,26	.3033
9	.1855	.1853	.0003	.0092	1,27	.9244	.1937	.1855	.0081	.2623	1,26	.6128
10	.2744	.2579	.0165	.6157	1,27	.4395	.2753	.2744	.0009	.0318	1,26	.8598
11	.2647	.2457	.0190	.6998	1,27	.4105	.3213	.2647	.0566	2.1678	1,26	.1529

TABLE 15

CONTRIBUTIONS OF THE GRS VARIANCE AND THE GRS SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 5 MEASUREMENT

	VARIANCE						SQUARED VARIANCE					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.2948	.2846	.0102	.3907	1,27	.5372	.3054	.2948	.0106	.3967	1,26	.5343
2	.3455	.2922	.0533	2.1995	1,27	.1496	.3524	.3455	.0069	.2756	1,26	.6041
3	.4392	.2686	.1706	8.2131	1,27	.0080*	.4436	.4392	.0044	.2073	1,26	.6527
4	.4191	.2856	.1336	6.2089	1,27	.0191*	.4196	.4191	.0004	.0200	1,26	.8881
5	.2969	.2739	.0230	.8843	1,27	.3554	.2971	.2969	.0002	.0066	1,26	.9360
6	.3347	.2554	.0793	3.2190	1,27	.0848	.3574	.3347	.0227	.9192	1,26	.3465
7	.2347	.2239	.0107	.3790	1,27	.5433	.2465	.2347	.0118	.4067	1,26	.5292
8	.2587	.2405	.0182	.6620	1,27	.4230	.2982	.2587	.0395	1.4650	1,26	.2370
9	.2630	.2609	.0021	.0753	1,27	.7858	.2709	.2630	.0080	.2839	1,26	.5981
10	.3860	.3543	.0317	1.3936	1,27	.2481	.3867	.3860	.0007	.0280	1,26	.8684
11	.2658	.2655	.0003	.0098	1,27	.9221	.2691	.2658	.0033	.1174	1,26	.7346

TABLE 16

CONTRIBUTIONS OF THE GRS VARIANCE AND THE GRS SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 6 GEOMETRY

	VARIANCE						SQUARED VARIANCE					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.5087	.4916	.0171	.9421	1,27	.3404	.5088	.5087	.0001	.0050	1,26	.9439
2	.4963	.4897	.0067	.3576	1,27	.5548	.4977	.4963	.0014	.0725	1,26	.7899
3	.4991	.4872	.0120	.6444	1,27	.4291	.5251	.4991	.0260	1.4208	1,26	.2440
4	.5319	.5066	.0253	1.4620	1,27	.2371	.5320	.5319	.0001	.0032	1,26	.9554
5	.4980	.4979	.0001	.0049	1,27	.9445	.4996	.4980	.0015	.0792	1,26	.7807
6	.4981	.4961	.0020	.1070	1,27	.7461	.5005	.4981	.0024	.1254	1,26	.7261
7	.5324	.5288	.0036	.2086	1,27	.6515	.5431	.5324	.0107	.6106	1,26	.4416
8	.5070	.4989	.0080	.4400	1,27	.5128	.5185	.5070	.0115	.6207	1,26	.4379
9	.5707	.5696	.0012	.0725	1,27	.7898	.5865	.5707	.0158	.9915	1,26	.3286
10	.5237	.5026	.0210	1.1918	1,27	.2846	.5464	.5237	.0227	1.3080	1,26	.2646
11	.5985	.4995	.0991	6.6622	1,27	.0156*	.6100	.5985	.0114	.7625	1,26	.3906

TABLE 17

CONTRIBUTIONS OF THE GRS VARIANCE AND THE GRS SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 7 TOTAL

	VARIANCE						SQUARED VARIANCE					
GRS	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.7069	.7050	.0019	.1777	1,27	.6767	.7125	.7069	.0056	.5046	1,26	.4838
2	.7009	.6923	.0086	.7805	1,27	.3848	.7091	.7009	.0082	.6381	1,26	.4000
3	.7052	.6995	.0057	.5196	1,27	.4772	.7338	.7052	.0286	2.7957	1,26	.1065
4	.7009	.6843	.0166	1.4999	1,27	.2313	.7419	.7009	.0410	4.1343	1,26	.0523
5	.7086	.7046	.0040	.3739	1,27	.5460	.7107	.7086	.0021	.1863	1,26	.6696
6	.7373	.7304	.0069	.7119	1,27	.4062	.7404	.7373	.0031	.3076	1,26	.5839
7	.6962	.6962	.0001	.0075	1,27	.9318	.6972	.6962	.0010	.0834	1,26	.7750
8	.7541	.7535	.0006	.0629	1,27	.8039	.7543	.7541	.0002	.0205	1,26	.8872
9	.7166	.7085	.0080	.7628	1,27	.3901	.7182	.7166	.0017	.1531	1,26	.6987
10	.7052	.7010	.0042	.3832	1,27	.5411	.7105	.7052	.0052	.4701	1,26	.4990
11	.7027	.6978	.0049	.4470	1,27	.5094	.7149	.7027	.0122	1.1099	1,26	.3018

TABLE 18 PAGE 1

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 1 BASIC MULTIPLICATION

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.4601	.4600	.0001	.0067	1,29	.9355	.4606	.4601	.0006	.0291	1,28	.8658
2	.4822	.4600	.0223	1.2464	1,29	.2734	.4981	.4822	.0159	.8880	1,28	.3541
3	.5801	.4600	.1201	8.2941	1,29	.0074*	.5802	.5801	.0001	.0096	1,28	.9226
4	.4683	.4600	.0083	.4540	1,29	.5058	.4754	.4683	.0071	.3788	1,28	.5432
5	.4797	.4600	.0197	1.0988	1,29	.3032	.4797	.4797	.0000	.0000	1,28	.9954
6	.4874	.4600	.0275	1.5554	1,29	.2223	.5177	.4874	.0303	1.7585	1,28	.1955
7	.4642	.4600	.0043	.2311	1,29	.6343	.4657	.4642	.0015	.0787	1,28	.7811
8	.4600	.4600	.0000	.0003	1,29	.9854	.4634	.4600	.0035	.1815	1,28	.6734
9	.4630	.4600	.0031	.1658	1,29	.6868	.4686	.4630	.0055	.2915	1,28	.5935
10	.5382	.4600	.0782	4.9110	1,29	.0347*	.5384	.5382	.0003	.0167	1,28	.8982
11	.4729	.4600	.0129	.7115	1,29	.4058	.4746	.4729	.0017	.0893	1,28	.7672
12	.4865	.4600	.0265	1.4984	1,29	.2308	.5090	.4865	.0225	1.2843	1,28	.2667
13	.4781	.4600	.0182	1.0106	1,29	.3231	.4805	.4781	.0023	.1262	1,28	.7251
14	.4886	.4600	.0286	1.6242	1,29	.2126	.4912	.4886	.0026	.1405	1,28	.7106
15	.4792	.4600	.0192	1.0692	1,29	.3097	.5174	.4792	.0383	2.2196	1,28	.1474
16	.5108	.4600	.0509	3.0164	1,29	.0930	.5338	.5108	.0229	1.3775	1,28	.2504
17	.4680	.4600	.0080	.4374	1,29	.5136	.4680	.4680	.0000	.0000	1,281	.0000
18	.4619	.4600	.0020	.1063	1,29	.7468	.4619	.4619	.0000	.0000	1,281	.0000
19	.5033	.4600	.0433	2.5293	1,29	.1226	.5189	.5033	.0156	.9074	1,28	.3489
20	.4634	.4600	.0034	.1846	1,29	.6706	.4639	.4634	.0006	.0294	1,28	.8650
21	.4602	.4600	.0003	.0150	1,29	.9032	.4673	.4602	.0071	.3732	1,28	.5462
22	.4691	.4600	.0091	.4978	1,29	.4861	.4698	.4691	.0008	.0398	1,28	.8432
23	.4844	.4600	.0244	1.3728	1,29	.2509	.4879	.4844	.0035	.1931	1,28	.6637
24	.4632	.4600	.0032	.1747	1,29	.6798	.4642	.4632	.0010	.0538	1,28	.8182
25	.4717	.4600	.0117	.6443	1,29	.4287	.4791	.4717	.0074	.3982	1,28	.5331
26	.4617	.4600	.0018	.0957	1,29	.7593	.4620	.4617	.0003	.0136	1,28	.9079
27	.4634	.4600	.0034	.1864	1,29	.6691	.4637	.4634	.0003	.0162	1,28	.8997
28	.4634	.4600	.0034	.1864	1,29	.6691	.4637	.4634	.0003	.0162	1,28	.8997
29	.4634	.4600	.0034	.1864	1,29	.6691	.4637	.4634	.0003	.0162	1,28	.8997
30	.4832	.4600	.0232	1.3030	1,29	.2630	.4840	.4832	.0008	.0434	1,28	.8364
31	.4636	.4600	.0037	.1988	1,29	.6590	.4641	.4636	.0005	.0240	1,28	.8780

TABLE 18 PAGE 2

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 1 BASIC MULTIPLICATION

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.4617	.4600	.0018	.0951	1,29	.7600	.4619	.4617	.0002	.0097	1,28	.9221
33	.4691	.4600	.0091	.4985	1,29	.4858	.4747	.4691	.0056	.3005	1,28	.5879
34	.4690	.4600	.0091	.4950	1,29	.4873	.4777	.4690	.0087	.4653	1,28	.5008
35	.4604	.4600	.0004	.0220	1,29	.8830	.5019	.4604	.0415	2.3349	1,28	.1377
36	.4808	.4600	.0208	1.1614	1,29	.2900	.4857	.4808	.0050	.2718	1,28	.6063
37	.4808	.4600	.0208	1.1614	1,29	.2900	.4857	.4808	.0050	.2718	1,28	.6063
38	.5430	.4600	.0830	5.2686	1,29	.0291*	.5433	.5430	.0004	.0217	1,28	.8840
39	.5898	.4600	.1298	9.1758	1,29	.0051*	.5898	.5898	.0000	.0000	1,28	1.0000
40	.4680	.4600	.0081	.4407	1,29	.5120	.4699	.4680	.0019	.1005	1,28	.7536
41	.4659	.4600	.0059	.3214	1,29	.5751	.4736	.4659	.0077	.4096	1,28	.5274
42	.5199	.4600	.0600	3.6221	1,29	.0670	.5208	.5199	.0009	.0507	1,28	.8235
43	.4632	.4600	.0033	.1767	1,29	.6774	.4643	.4632	.0010	.0540	1,28	.8179
44	.4694	.4600	.0094	.5146	1,29	.4789	.4866	.4694	.0172	.9369	1,28	.3414
45	.4654	.4600	.0054	.2940	1,29	.5918	.4904	.4654	.0250	1.3756	1,28	.2507
46	.4805	.4600	.0206	1.1494	1,29	.2925	.5388	.4805	.0583	3.5399	1,28	.0703
47	.4754	.4600	.0154	.8537	1,29	.3631	.4907	.4754	.0153	.8407	1,28	.3670
48	.4775	.4600	.0175	.9709	1,29	.3326	.5028	.4775	.0254	1.4304	1,28	.2417
49	.4660	.4600	.0061	.3300	1,29	.5701	.4662	.4660	.0002	.0092	1,28	.9244
50	.4822	.4600	.0222	1.2430	1,29	.2740	.4826	.4822	.0005	.0254	1,28	.8745
51	.4820	.4600	.0221	1.2365	1,29	.2753	.5056	.4820	.0235	1.3321	1,28	.2582
52	.4679	.4600	.0080	.4344	1,29	.5151	.4731	.4679	.0052	.2749	1,28	.6042
53	.5151	.4600	.0551	3.2969	1,29	.0798	.5281	.5151	.0130	.7696	1,28	.3878
54	.4687	.4600	.0088	.4787	1,29	.4945	.4951	.4687	.0264	1.4612	1,28	.2368
55	.4618	.4600	.0019	.1015	1,29	.7523	.4618	.4618	.0000	.0002	1,28	.9880
56	.4739	.4600	.0139	.7682	1,29	.3880	.5020	.4739	.0281	1.5791	1,28	.2193
57	.4616	.4600	.0017	.0894	1,29	.7670	.4710	.4616	.0094	.4966	1,28	.4868
58	.4684	.4600	.0084	.4581	1,29	.5039	.4731	.4684	.0048	.2543	1,28	.6180
59	.5068	.4600	.0469	2.7568	1,29	.1076	.5242	.5068	.0174	1.0215	1,28	.3208
60	.4665	.4600	.0066	.3577	1,29	.5544	.5119	.4665	.0454	2.6050	1,28	.1177
61	.4695	.4600	.0095	.5212	1,29	.4761	.4695	.4695	.0000	.0023	1,28	.9620
62	.4781	.4600	.0182	1.0090	1,29	.3235	.4861	.4781	.0080	.4354	1,28	.5148

TABLE 19 PAGE 1

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 2 FACTORS AND PRIME NUMBERS

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.3630	.3360	.0270	1.2273	1,29	.2770	.3753	.3630	.0123	.5494	1,28	.4648
2	.5045	.3360	.1684	9.8560	1,29	.0039*	.5786	.5045	.0741	4.9258	1,28	.0347*
3	.3368	.3360	.0007	.0324	1,29	.8584	.3384	.3368	.0016	.0694	1,28	.7941
4	.3361	.3360	.0000	.0011	1,29	.9740	.3373	.3361	.0013	.0544	1,28	.8172
5	.3414	.3360	.0053	.2341	1,29	.6321	.3518	.3414	.0104	.4506	1,28	.5075
6	.3396	.3360	.0036	.1569	1,29	.6949	.3401	.3396	.0005	.0216	1,28	.8841
7	.3488	.3360	.0127	.5668	1,29	.4576	.3908	.3488	.0420	1.9298	1,28	.1757
8	.3384	.3360	.0024	.1031	1,29	.7504	.3526	.3384	.0142	.6147	1,28	.4396
9	.3408	.3360	.0048	.2098	1,29	.6504	.3628	.3408	.0220	.9652	1,28	.3343
10	.3588	.3360	.0228	1.0300	1,29	.3186	.3593	.3588	.0005	.0219	1,28	.8834
11	.3537	.3360	.0177	.7948	1,29	.3800	.3541	.3537	.0003	.0150	1,28	.9033
12	.3559	.3360	.0199	.8959	1,29	.3517	.4267	.3559	.0708	3.4578	1,28	.0735
13	.3504	.3360	.0143	.6397	1,29	.4303	.3867	.3504	.0364	1.6681	1,28	.2081
14	.3412	.3360	.0051	.2252	1,29	.6387	.3462	.3412	.0050	.2144	1,28	.6469
15	.3617	.3360	.0257	1.1666	1,29	.2890	.3912	.3617	.0295	1.3584	1,28	.2536
16	.3634	.3360	.0273	1.2450	1,29	.2737	.5133	.3634	.1500	8.6282	1,28	.0066*
17	.3710	.3360	.0350	1.6115	1,29	.2144	.3710	.3710	.0000	.0000	1,28	1.0000
18	.3363	.3360	.0003	.0114	1,29	.9159	.3363	.3363	.0000	.0000	1,28	1.0000
19	.4413	.3360	.1052	5.4611	1,29	.0266*	.4542	.4413	.0130	.6659	1,28	.4214
20	.3412	.3360	.0052	.2275	1,29	.6370	.3415	.3412	.0003	.0140	1,28	.9068
21	.3424	.3360	.0064	.2824	1,29	.5992	.3645	.3424	.0221	.9720	1,28	.3326
22	.3368	.3360	.0008	.0333	1,29	.8564	.3449	.3368	.0081	.3448	1,28	.5618
23	.3402	.3360	.0042	.1834	1,29	.6716	.3600	.3402	.0198	.8655	1,28	.3602
24	.3383	.3360	.0023	.1008	1,29	.7531	.3456	.3383	.0073	.3126	1,28	.5805
25	.3663	.3360	.0303	1.3846	1,29	.2489	.3693	.3663	.0030	.1344	1,28	.7167
26	.3599	.3360	.0239	1.0838	1,29	.3066	.3609	.3599	.0009	.0410	1,28	.8410
27	.3372	.3360	.0011	.0498	1,29	.8264	.3392	.3372	.0020	.0851	1,28	.7726
28	.3372	.3360	.0011	.0498	1,29	.8264	.3392	.3372	.0020	.0851	1,28	.7726
29	.3372	.3360	.0011	.0498	1,29	.8264	.3392	.3372	.0020	.0851	1,28	.7726
30	.3383	.3360	.0023	.0987	1,29	.7557	.3540	.3383	.0158	.6832	1,28	.4155
31	.3938	.3360	.0578	2.7644	1,29	.1072	.3998	.3938	.0060	.2781	1,28	.6021

TABLE 19 PAGE 2

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 2 FACTORS AND PRIME NUMBERS

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.3433	.3360	.0072	.3191	1,29	.5765	.3435	.3433	.0002	.0097	1,28	.9222
33	.4547	.3360	.1186	6.3098	1,29	.0178*	.5279	.4547	.0732	4.3432	1,28	.0464*
34	.3867	.3360	.0506	2.3946	1,29	.1326	.4115	.3867	.0248	1.1819	1,28	.2862
35	.3365	.3360	.0005	.0210	1,29	.8857	.3382	.3365	.0017	.0729	1,28	.7891
36	.3445	.3360	.0084	.3735	1,29	.5459	.3445	.3445	.0000	.0002	1,28	.9902
37	.3445	.3360	.0084	.3735	1,29	.5459	.3445	.3445	.0000	.0002	1,28	.9902
38	.3452	.3360	.0092	.4065	1,29	.5287	.3599	.3452	.0147	.6424	1,28	.4296
39	.3707	.3360	.0347	1.5980	1,29	.2162	.3707	.3707	.0000	.0000	1,28	1.0000
40	.3460	.3360	.0100	.4425	1,29	.5112	.3479	.3460	.0018	.0791	1,28	.7806
41	.3379	.3360	.0018	.0807	1,29	.7784	.3380	.3379	.0001	.0062	1,28	.9378
42	.3633	.3360	.0273	1.2435	1,29	.2748	.3641	.3633	.0008	.0339	1,28	.8552
43	.3506	.3360	.0146	.6524	1,29	.4258	.3578	.3506	.0071	.3100	1,28	.5821
44	.3490	.3360	.0129	.5757	1,29	.4541	.3597	.3490	.0108	.4709	1,28	.4982
45	.3468	.3360	.0108	.4775	1,29	.4950	.3568	.3468	.0100	.4346	1,28	.5151
46	.3369	.3360	.0009	.0399	1,29	.8431	.3388	.3369	.0019	.0794	1,28	.7801
47	.3385	.3360	.0025	.1095	1,29	.7431	.3422	.3385	.0037	.1564	1,28	.6955
48	.3444	.3360	.0083	.3690	1,29	.5483	.3461	.3444	.0017	.0722	1,28	.7901
49	.3860	.3360	.0500	2.3594	1,29	.1354	.3968	.3860	.0108	.5024	1,28	.4843
50	.3450	.3360	.0090	.3963	1,29	.5339	.3708	.3450	.0258	1.1470	1,28	.2933
51	.3523	.3360	.0163	.7285	1,29	.4004	.3653	.3523	.0130	.5727	1,28	.4555
52	.3362	.3360	.0001	.0060	1,29	.9387	.3411	.3362	.0049	.2095	1,28	.6507
53	.3896	.3360	.0535	2.5433	1,29	.1216	.3896	.3896	.0000	.0089	1,28	.9760
54	.3389	.3360	.0029	.1264	1,29	.7248	.3495	.3389	.0106	.4543	1,28	.5058
55	.3465	.3360	.0104	.4635	1,29	.5014	.3483	.3465	.0018	.0787	1,28	.7812
56	.3361	.3360	.0001	.0030	1,29	.9566	.3403	.3361	.0042	.1768	1,28	.6774
57	.3422	.3360	.0061	.2698	1,29	.6074	.3594	.3422	.0173	.7544	1,28	.3925
58	.3698	.3360	.0330	1.5156	1,29	.2282	.3729	.3698	.0039	.1755	1,28	.6784
59	.3382	.3360	.0021	.0936	1,29	.7619	.3399	.3382	.0018	.0749	1,28	.7864
60	.3365	.3360	.0005	.0220	1,29	.8832	.4002	.3365	.0637	2.9726	1,28	.0957
61	.3477	.3360	.0117	.5189	1,29	.4771	.3761	.3477	.0283	1.2722	1,28	.2689
62	.3481	.3360	.0120	.5349	1,29	.4704	.3522	.3481	.0041	.1773	1,28	.6769

TABLE 20 PAGE 1

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 3 BASIC DIVISION

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.4372	.3574	.0798	4.1096	1,29	.0519	.4491	.4372	.0119	.6056	1,28	.4430
2	.3580	.3574	.0006	.0278	1,29	.8688	.3846	.3580	.0265	1.2076	1,28	.2812
3	.3578	.3574	.0004	.0189	1,29	.8916	.5084	.3578	.1506	8.5762	1,28	.0067*
4	.3576	.3574	.0002	.0084	1,29	.9275	.3615	.3576	.0039	.1716	1,28	.6819
5	.3787	.3574	.0212	.9907	1,29	.3278	.3882	.3787	.0095	.4359	1,28	.5145
6	.3612	.3574	.0038	.1707	1,29	.6825	.3707	.3612	.0096	.4250	1,28	.5198
7	.3576	.3574	.0001	.0062	1,29	.9380	.3674	.3576	.0098	.4332	1,28	.5158
8	.4100	.3574	.0526	2.5843	1,29	.1188	.4206	.4100	.0106	.5139	1,28	.4794
9	.3724	.3574	.0150	.6916	1,29	.4124	.3788	.3724	.0064	.2877	1,28	.5960
10	.4083	.3574	.0509	2.4938	1,29	.1251	.4260	.4083	.0177	.8633	1,28	.3607
11	.3863	.3574	.0288	1.3628	1,29	.2526	.3909	.3863	.0046	.2118	1,28	.6490
12	.3605	.3574	.0031	.1409	1,29	.7101	.3749	.3605	.0144	.6436	1,28	.4292
13	.3973	.3574	.0399	1.9204	1,29	.1764	.4313	.3973	.0339	1.6712	1,28	.2067
14	.3953	.3574	.0379	1.8185	1,29	.1879	.4087	.3953	.0133	.6316	1,28	.4334
15	.3629	.3574	.0054	.2468	1,29	.6238	.3738	.3629	.0109	.4877	1,28	.4907
16	.4141	.3574	.0566	2.8027	1,29	.1049	.4395	.4141	.0254	1.2706	1,28	.2692
17	.4256	.3574	.0682	3.4444	1,29	.0737	.4256	.4256	.0000	.0000	1,28	1.0000
18	.3920	.3574	.0345	1.6467	1,29	.2096	.3920	.3920	.0000	.0000	1,28	1.0000
19	.4430	.3574	.0856	4.4550	1,29	.0435*	.4482	.4430	.0052	.2637	1,28	.6116
20	.3637	.3574	.0063	.2852	1,29	.5974	.3656	.3637	.0019	.0838	1,28	.7744
21	.4239	.3574	.0665	3.3450	1,29	.0777	.4239	.4239	.0000	.0015	1,28	.9695
22	.3678	.3574	.0103	.4743	1,29	.4965	.3753	.3678	.0075	.3373	1,28	.5660
23	.3597	.3574	.0023	.1037	1,29	.7497	.4496	.3597	.0899	4.5726	1,28	.0414*
24	.4118	.3574	.0543	2.6788	1,29	.1125	.4359	.4118	.0241	1.1975	1,28	.2831
25	.5472	.3574	.1898	12.1546	1,29	.0016*	.5516	.5472	.0044	.2765	1,28	.6032
26	.3585	.3574	.0011	.0475	1,29	.8291	.3726	.3585	.0141	.6307	1,28	.4338
27	.4141	.3574	.0567	2.8069	1,29	.1046	.4330	.4141	.0188	.9299	1,28	.3431
28	.4141	.3574	.0567	2.8069	1,29	.1046	.4330	.4141	.0188	.9299	1,28	.3431
29	.4141	.3574	.0567	2.8069	1,29	.1046	.4330	.4141	.0188	.9299	1,28	.3431
30	.3632	.3574	.0057	.2608	1,29	.6134	.3691	.3632	.0059	.2636	1,28	.6117
31	.3802	.3574	.0228	1.0668	1,29	.3102	.4014	.3802	.0212	.9904	1,28	.3282

TABLE 20 PAGE 2

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 3 BASIC DIVISION

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.3633	.3574	.0058	.2659	1,29	.6100	.3955	.3633	.0322	1.4937	1,28	.2318
33	.4505	.3574	.0930	4.9101	1,29	.0347*	.5727	.4505	.1222	8.0096	1,28	.0085*
34	.4553	.3574	.0979	5.2132	1,29	.0299*	.4649	.4553	.0096	.5011	1,28	.4849
35	.4812	.3574	.1237	6.9170	1,29	.0135*	.4826	.4812	.0015	.0788	1,28	.7810
36	.4580	.3574	.1006	5.3835	1,29	.0276*	.5100	.4580	.0519	2.9667	1,28	.0960
37	.4580	.3574	.1006	5.3835	1,29	.0276*	.5100	.4580	.0519	2.9667	1,28	.0960
38	.3767	.3574	.0192	.8949	1,29	.3520	.3776	.3767	.0010	.0434	1,28	.8364
39	.3704	.3574	.0130	.5977	1,29	.4457	.3704	.3704	.0000	.0000	1,28	1.0000
40	.4519	.3574	.0945	4.9981	1,29	.0332*	.4773	.4519	.0254	1.3625	1,28	.2530
41	.3925	.3574	.0351	1.6731	1,29	.2060	.3931	.3925	.0006	.0297	1,28	.8643
42	.3648	.3574	.0074	.3358	1,29	.5667	.4104	.3648	.0457	2.1687	1,28	.1520
43	.3923	.3574	.0348	1.6629	1,29	.2074	.3997	.3923	.0074	.3465	1,28	.5608
44	.3596	.3574	.0022	.1000	1,29	.7541	.3818	.3596	.0222	1.0046	1,28	.3248
45	.3642	.3574	.0068	.3093	1,29	.5824	.3750	.3642	.0108	.4856	1,28	.4916
46	.3604	.3574	.0029	.1336	1,29	.7174	.3695	.3604	.0092	.4073	1,28	.5285
47	.3603	.3574	.0028	.1285	1,29	.7226	.3930	.3603	.0328	1.5111	1,28	.2292
48	.4078	.3574	.0504	2.4672	1,29	.1271	.4414	.4078	.0336	1.6825	1,28	.2052
49	.3629	.3574	.0054	.2475	1,29	.6226	.4018	.3629	.0389	1.8228	1,28	.1878
50	.4295	.3574	.0720	3.6610	1,29	.0656	.4431	.4295	.0136	.6846	1,28	.4150
51	.3956	.3574	.0382	1.8329	1,29	.1862	.4025	.3956	.0069	.3221	1,28	.5749
52	.4164	.3574	.0590	2.9385	1,29	.0976	.4508	.4164	.0344	1.7526	1,28	.1963
53	.3739	.3574	.0165	.7642	1,29	.3892	.4274	.3739	.0535	2.6174	1,28	.1169
54	.3620	.3574	.0046	.2087	1,29	.6512	.3667	.3620	.0047	.2065	1,28	.6530
55	.4269	.3574	.0695	3.5180	1,29	.0708	.4313	.4269	.0043	.2142	1,28	.6471
56	.4066	.3574	.0492	2.4857	1,29	.1317	.4459	.4066	.0392	1.9807	1,28	.1703
57	.3776	.3574	.0202	.9486	1,29	.3402	.3799	.3776	.0022	.1013	1,28	.7527
58	.5777	.3574	.2203	15.1298	1,29	.0005*	.5777	.5777	.0000	.0000	1,28	.9947
59	.3597	.3574	.0023	.1031	1,29	.7585	.3609	.3597	.0012	.0528	1,28	.8199
60	.3686	.3574	.0111	.5108	1,29	.4805	.3731	.3686	.0045	.2029	1,28	.6559
61	.3704	.3574	.0130	.5975	1,29	.4458	.3853	.3704	.0149	.6794	1,28	.4168
62	.3864	.3574	.0290	1.3713	1,29	.2511	.3971	.3864	.0106	.4940	1,28	.4879

TABLE 21 PAGE 1

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 4 BASIC FRACTIONS

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.1576	.1490	.0087	.2986	1,29	.5889	.1649	.1576	.0073	.2447	1,28	.6247
2	.1559	.1490	.0069	.2382	1,29	.6292	.1831	.1559	.0272	.9315	1,28	.3427
3	.1501	.1490	.0011	.0376	1,29	.8476	.2635	.1501	.1135	4.3145	1,28	.0471*
4	.1491	.1490	.0001	.0042	1,29	.9490	.1648	.1491	.0157	.5271	1,28	.4739
5	.3440	.1490	.1951	8.6228	1,29	.0064*	.3458	.3440	.0017	.0749	1,28	.7863
6	.1504	.1490	.0014	.0491	1,29	.8261	.1598	.1504	.0094	.3124	1,28	.5807
7	.1499	.1490	.0009	.0304	1,29	.8628	.1552	.1499	.0054	.1774	1,28	.6768
8	.1555	.1490	.0065	.2247	1,29	.6391	.1561	.1555	.0006	.0192	1,28	.8907
9	.1548	.1490	.0058	.1999	1,29	.6581	.1559	.1548	.0011	.0367	1,28	.8495
10	.1502	.1490	.0012	.0406	1,29	.8417	.1682	.1502	.0180	.6074	1,28	.4423
11	.1579	.1490	.0090	.3092	1,29	.5825	.1625	.1579	.0046	.1529	1,28	.6988
12	.1495	.1490	.0005	.0174	1,29	.8961	.1636	.1495	.0141	.4727	1,28	.4974
13	.1504	.1490	.0014	.0478	1,29	.8285	.1550	.1504	.0046	.1524	1,28	.6992
14	.1572	.1490	.0082	.2829	1,29	.5989	.1573	.1572	.0001	.0049	1,28	.9448
15	.1901	.1490	.0411	1.4730	1,29	.2347	.2979	.1901	.1078	4.2985	1,28	.0475*
16	.1538	.1490	.0048	.1641	1,29	.6884	.1881	.1538	.0344	1.1855	1,28	.2855
17	.1559	.1490	.0069	.2382	1,29	.6291	.1559	.1559	.0000	.0000	1,28	1.0000
18	.1935	.1490	.0445	1.5998	1,29	.2160	.1935	.1935	.0000	.0000	1,28	1.0000
19	.1654	.1490	.0165	.5717	1,29	.4557	.1656	.1654	.0001	.0046	1,28	.9466
20	.1498	.1490	.0008	.0285	1,29	.8671	.1546	.1498	.0048	.1598	1,28	.6923
21	.1807	.1490	.0317	1.1229	1,29	.2980	.1821	.1807	.0014	.0495	1,28	.8256
22	.1995	.1490	.0505	1.8311	1,29	.1865	.2031	.1995	.0036	.1273	1,28	.7239
23	.1953	.1490	.0463	1.6688	1,29	.2066	.2389	.1953	.0436	1.6054	1,28	.2156
24	.1555	.1490	.0066	.2250	1,29	.6388	.1567	.1555	.0012	.0389	1,28	.8451
25	.2493	.1490	.1004	3.8767	1,29	.0586	.3154	.2493	.0661	2.7042	1,28	.1113
26	.1495	.1490	.0005	.0170	1,29	.8972	.1750	.1495	.0255	.8656	1,28	.3601
27	.1917	.1490	.0427	1.5337	1,29	.2255	.2016	.1917	.0099	.3471	1,28	.5605
28	.1917	.1490	.0427	1.5337	1,29	.2255	.2016	.1917	.0099	.3471	1,28	.5605
29	.1917	.1490	.0427	1.5337	1,29	.2255	.2016	.1917	.0099	.3471	1,28	.5605
30	.1490	.1490	.0000	.0004	1,29	.9837	.1587	.1490	.0098	.3251	1,28	.5731
31	.1492	.1490	.0002	.0069	1,29	.9346	.1672	.1492	.0180	.6062	1,28	.4428

TABLE 21 PAGE 2

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 4 BASIC FRACTIONS

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.1568	.1490	.0078	.2690	1,29	.6079	.1568	.1568	.0000	.0011	1,28	.9737
33	.2750	.1490	.1260	5.0410	1,29	.0325*	.2939	.2750	.0189	.7499	1,28	.3939
34	.1496	.1490	.0006	.0201	1,29	.8882	.1518	.1496	.0023	.0746	1,28	.7867
35	.2122	.1490	.0632	2.3276	1,29	.1379	.2965	.2122	.0843	3.3569	1,28	.0776
36	.1702	.1490	.0212	.7409	1,29	.3964	.1838	.1702	.0137	.4687	1,28	.4992
37	.1702	.1490	.0212	.7409	1,29	.3964	.1838	.1702	.0137	.4687	1,28	.4992
38	.1897	.1490	.0407	1.4577	1,29	.2370	.1983	.1897	.0086	.3007	1,28	.5878
39	.1819	.1490	.0329	1.1677	1,29	.2888	.1819	.1819	.0000	.0000	1,28	1.0000
40	.1490	.1490	.0000	.0000	1,29	1.0000	.1490	.1490	.0000	.0007	1,28	.9788
41	.1550	.1490	.0060	.2076	1,29	.6521	.1590	.1550	.0040	.1317	1,28	.7194
42	.1492	.1490	.0002	.0074	1,29	.9320	.1675	.1492	.0183	.6152	1,28	.4394
43	.1573	.1490	.0083	.2855	1,29	.5972	.1644	.1573	.0072	.2404	1,28	.6277
44	.1490	.1490	.0000	.0010	1,29	.9748	.1949	.1490	.0459	1.5968	1,28	.2168
45	.2225	.1490	.0736	2.7436	1,29	.1084	.2539	.2225	.0314	1.1781	1,28	.2870
46	.1490	.1490	.0000	.0000	1,29	1.0000	.1843	.1490	.0353	1.2120	1,28	.2805
47	.1503	.1490	.0014	.0469	1,29	.8300	.2512	.1503	.1009	3.7720	1,28	.0622
48	.1782	.1490	.0293	1.0332	1,29	.3178	.1809	.1782	.0027	.0921	1,28	.7638
49	.1589	.1490	.0100	.3434	1,29	.5624	.1641	.1589	.0052	.1750	1,28	.6789
50	.1560	.1490	.0071	.2429	1,29	.6258	.2186	.1560	.0626	2.2438	1,28	.1455
51	.1608	.1490	.0119	.4103	1,29	.5269	.2017	.1608	.0408	1.4318	1,28	.2415
52	.1842	.1490	.0353	1.2534	1,29	.2721	.1874	.1842	.0032	.1095	1,28	.7432
53	.2579	.1490	.1090	4.2589	1,29	.0481*	.2605	.2579	.0026	.0967	1,28	.7581
54	.1594	.1490	.0104	.3592	1,29	.5536	.1744	.1594	.0150	.5092	1,28	.4814
55	.1775	.1490	.0285	1.0062	1,29	.3241	.1870	.1775	.0095	.3260	1,28	.5726
56	.1767	.1490	.0277	.9757	1,29	.3314	.1774	.1767	.0007	.0238	1,28	.8785
57	.1809	.1490	.0319	1.1303	1,29	.2965	.1844	.1809	.0035	.1193	1,28	.7324
58	.1490	.1490	.0001	.0021	1,29	.9634	.1538	.1490	.0048	.1587	1,28	.6933
59	.1530	.1490	.0041	.1397	1,29	.7113	.1719	.1530	.0188	.6369	1,28	.4316
60	.1490	.1490	.0001	.0024	1,29	.9611	.1491	.1490	.0000	.0016	1,28	.9686
61	.1587	.1490	.0098	.3369	1,29	.5661	.1684	.1587	.0096	.3245	1,28	.5734
62	.1553	.1490	.0063	.2160	1,29	.6456	.1979	.1553	.0426	1.4870	1,28	.2329

TABLE 22 PAGE 1

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 5 MEASUREMENT

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.2247	.2177	.0070	.2628	1,29	.6121	.2299	.2247	.0052	.1881	1,28	.6678
2	.2367	.2177	.0190	.7220	1,29	.4024	.2457	.2367	.0089	.3319	1,28	.5691
3	.2304	.2177	.0127	.4791	1,29	.4943	.2412	.2304	.0108	.3991	1,28	.5327
4	.2221	.2177	.0044	.1649	1,29	.6877	.2241	.2221	.0019	.0692	1,28	.7945
5	.2179	.2177	.0002	.0067	1,29	.9355	.2358	.2179	.0179	.6567	1,28	.4245
6	.3115	.2177	.0938	3.9497	1,29	.0564	.3134	.3115	.0019	.0777	1,28	.7824
7	.2182	.2177	.0005	.0181	1,29	.8938	.2258	.2182	.0076	.2760	1,28	.6035
8	.2182	.2177	.0005	.0182	1,29	.8937	.2734	.2182	.0551	2.1249	1,28	.1560
9	.2295	.2177	.0118	.4436	1,29	.5106	.2413	.2295	.0118	.4363	1,28	.5143
10	.2195	.2177	.0018	.0667	1,29	.7981	.2243	.2195	.0047	.1710	1,28	.6824
11	.2612	.2177	.0434	1.7051	1,29	.2019	.2754	.2612	.0142	.5496	1,28	.4646
12	.2214	.2177	.0037	.1362	1,29	.7148	.2567	.2214	.0353	1.3290	1,28	.2587
13	.2352	.2177	.0175	.6618	1,29	.4226	.2820	.2352	.0469	1.8277	1,28	.1872
14	.2343	.2177	.0166	.6291	1,29	.4341	.2776	.2343	.0433	1.6766	1,28	.2059
15	.2187	.2177	.0010	.0369	1,29	.8490	.2496	.2187	.0309	1.1529	1,28	.2921
16	.2300	.2177	.0123	.4641	1,29	.5011	.2678	.2300	.0377	1.4432	1,28	.2397
17	.2321	.2177	.0144	.5448	1,29	.4664	.2321	.2321	.0000	.0000	1,28	1.0000
18	.2679	.2177	.0502	1.9878	1,29	.1692	.2679	.2679	.0000	.0000	1,28	1.0000
19	.2207	.2177	.0030	.1098	1,29	.7427	.2249	.2207	.0042	.1519	1,28	.6997
20	.2198	.2177	.0020	.0757	1,29	.7851	.2308	.2198	.0110	.4009	1,28	.5318
21	.2362	.2177	.0184	.6999	1,29	.4096	.3026	.2362	.0664	2.6674	1,28	.1136
22	.2244	.2177	.0067	.2505	1,29	.6205	.3341	.2244	.1096	4.6096	1,28	.0406*
23	.2183	.2177	.0006	.0206	1,29	.8870	.2220	.2183	.0037	.1333	1,28	.7178
24	.2295	.2177	.0118	.4434	1,29	.5108	.2376	.2295	.0081	.2970	1,28	.5901
25	.2232	.2177	.0055	.2060	1,29	.6533	.2549	.2232	.0317	1.1895	1,28	.2847
26	.2181	.2177	.0004	.0132	1,29	.9095	.2468	.2181	.0288	1.0694	1,28	.3099
27	.2502	.2177	.0325	1.2554	1,29	.2717	.2502	.2502	.0001	.0022	1,28	.9633
28	.2502	.2177	.0325	1.2554	1,29	.2717	.2502	.2502	.0001	.0022	1,28	.9633
29	.2502	.2177	.0325	1.2554	1,29	.2717	.2502	.2502	.0001	.0022	1,28	.9633
30	.2673	.2177	.0496	1.9644	1,29	.1717	.3362	.2673	.0688	2.9027	1,28	.0995
31	.2260	.2177	.0083	.3105	1,29	.5817	.2497	.2260	.0236	.8825	1,28	.3555

TABLE 22 PAGE 2

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 5 MEASUREMENT

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.2210	.2177	.0033	.1220	1,29	.7294	.2668	.2210	.0459	1.7511	1,28	.1964
33	.2219	.2177	.0042	.1552	1,29	.6965	.2662	.2219	.0443	1.6891	1,28	.2043
34	.2460	.2177	.0282	1.0864	1,29	.3059	.2747	.2460	.0288	1.1100	1,28	.3011
35	.2493	.2177	.0316	1.2208	1,29	.2783	.2674	.2493	.0181	.6899	1,28	.4132
36	.2200	.2177	.0023	.0856	1,29	.7719	.3185	.2200	.0985	4.0470	1,28	.0540
37	.2200	.2177	.0023	.0856	1,29	.7719	.3185	.2200	.0985	4.0470	1,28	.0540
38	.2191	.2177	.0014	.0515	1,29	.8221	.2191	.2191	.0000	.0002	1,28	.9884
39	.2235	.2177	.0058	.2154	1,29	.6461	.2235	.2235	.0000	.0000	1,28	1.0000
40	.2244	.2177	.0067	.2487	1,29	.6217	.2250	.2244	.0006	.0226	1,28	.8815
41	.2297	.2177	.0120	.4502	1,29	.5075	.2438	.2297	.0141	.5250	1,28	.4756
42	.2410	.2177	.0233	.8902	1,29	.3532	.2441	.2410	.0031	.1152	1,28	.7390
43	.2246	.2177	.0069	.2569	1,29	.6161	.2328	.2246	.0082	.3004	1,28	.5880
44	.2325	.2177	.0148	.5601	1,29	.4602	.2327	.2325	.0001	.0040	1,28	.9502
45	.2260	.2177	.0083	.3121	1,29	.5807	.2278	.2260	.0017	.0631	1,28	.8034
46	.2178	.2177	.0001	.0043	1,29	.9483	.2191	.2178	.0013	.0451	1,28	.8334
47	.2237	.2177	.0060	.2228	1,29	.6405	.2297	.2237	.0060	.2183	1,28	.6440
48	.2179	.2177	.0001	.0053	1,29	.9424	.3171	.2179	.0992	4.0689	1,28	.0534
49	.2950	.2177	.0773	3.1781	1,29	.0851	.3519	.2950	.0569	2.4574	1,28	.1282
50	.2272	.2177	.0095	.3557	1,29	.5555	.2284	.2272	.0012	.0433	1,28	.8367
51	.2266	.2177	.0088	.3313	1,29	.5694	.2304	.2266	.0038	.1390	1,28	.7121
52	.2358	.2177	.0181	.6875	1,29	.4138	.2497	.2358	.0139	.5185	1,28	.4774
53	.2314	.2177	.0137	.5167	1,29	.4780	.2318	.2314	.0004	.0139	1,28	.9071
54	.2178	.2177	.0000	.0013	1,29	.9715	.2203	.2178	.0025	.0907	1,28	.7655
55	.2177	.2177	.0000	.0006	1,29	.9814	.2273	.2177	.0096	.3468	1,28	.5607
56	.2190	.2177	.0013	.0483	1,29	.8276	.2294	.2190	.0104	.3763	1,28	.5445
57	.2325	.2177	.0148	.5599	1,29	.4603	.2653	.2325	.0327	1.2478	1,28	.2735
58	.2326	.2177	.0149	.5636	1,29	.4589	.2350	.2326	.0024	.0860	1,28	.7714
59	.2178	.2177	.0001	.0035	1,29	.9531	.2240	.2178	.0062	.2227	1,28	.6407
60	.2216	.2177	.0039	.1447	1,29	.7064	.2220	.2216	.0004	.0133	1,28	.9089
61	.2451	.2177	.0274	1.0510	1,29	.3138	.2488	.2451	.0037	.1376	1,28	.7135
62	.2559	.2177	.0382	1.4882	1,29	.2323	.2648	.2559	.0089	.3405	1,28	.5642

TABLE 23 PAGE 1

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 6 GEOMETRY

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.4815	.4810	.0005	.0265	1,29	.8719	.5579	.4815	.0764	4.8378	1,28	.0365*
2	.4968	.4810	.0158	.9106	1,29	.3478	.5184	.4968	.0216	1.2538	1,28	.2723
3	.5069	.4810	.0259	1.5206	1,29	.2274	.5073	.5069	.0004	.0249	1,28	.8758
4	.4818	.4810	.0008	.0427	1,29	.8378	.4819	.4818	.0001	.0057	1,28	.9406
5	.4933	.4810	.0123	.7013	1,29	.4092	.5278	.4933	.0345	2.0474	1,28	.1635
6	.5078	.4810	.0268	1.5797	1,29	.2188	.5142	.5078	.0064	.3672	1,28	.5494
7	.4859	.4810	.0049	.2736	1,29	.6049	.4949	.4859	.0090	.4980	1,28	.4862
8	.4820	.4810	.0010	.0565	1,29	.8138	.4834	.4820	.0013	.0722	1,28	.7901
9	.4817	.4810	.0007	.0374	1,29	.8480	.4877	.4817	.0060	.3286	1,28	.5711
10	.4857	.4810	.0047	.2646	1,29	.6109	.4924	.4857	.0067	.3684	1,28	.5487
11	.4811	.4810	.0001	.0053	1,29	.9426	.5423	.4811	.0612	3.7428	1,28	.0632
12	.4868	.4810	.0058	.3252	1,29	.5729	.4980	.4868	.0112	.6265	1,28	.4353
13	.4857	.4810	.0047	.2625	1,29	.6123	.4862	.4857	.0005	.0254	1,28	.8745
14	.4905	.4810	.0095	.5390	1,29	.4687	.5233	.4905	.0328	1.9267	1,28	.1761
15	.4815	.4810	.0005	.0285	1,29	.8672	.4828	.4815	.0013	.0685	1,28	.7954
16	.5682	.4810	.0872	5.8551	1,29	.0220*	.5686	.5682	.0004	.0245	1,28	.8768
17	.4942	.4810	.0131	.7531	1,29	.3926	.4942	.4942	.0000	.0000	1,281	.0000
18	.4827	.4810	.0017	.0941	1,29	.7612	.4827	.4827	.0000	.0000	1,281	.0000
19	.4838	.4810	.0027	.1524	1,29	.6991	.4884	.4838	.0046	.2538	1,28	.6184
20	.4812	.4810	.0002	.0106	1,29	.9186	.5024	.4812	.0212	1.1923	1,28	.2842
21	.5259	.4810	.0448	2.7429	1,29	.1085	.5261	.5259	.0002	.0111	1,28	.9168
22	.5019	.4810	.0209	1.2149	1,29	.2794	.5468	.5019	.0449	2.7770	1,28	.1068
23	.4850	.4810	.0039	.2209	1,29	.6418	.5215	.4850	.0365	2.1351	1,28	.1551
24	.4812	.4810	.0001	.0067	1,29	.9352	.4871	.4812	.0060	.3261	1,28	.5725
25	.4842	.4810	.0032	.1777	1,29	.6765	.5140	.4842	.0298	1.7181	1,28	.2006
26	.4814	.4810	.0004	.0216	1,29	.8843	.4886	.4814	.0072	.3919	1,28	.5364
27	.4874	.4810	.0064	.3597	1,29	.5533	.4875	.4874	.0001	.0049	1,28	.9446
28	.4874	.4810	.0064	.3597	1,29	.5533	.4875	.4874	.0001	.0049	1,28	.9446
29	.4874	.4810	.0064	.3597	1,29	.5533	.4875	.4874	.0001	.0049	1,28	.9446
30	.4813	.4810	.0002	.0128	1,29	.9108	.4853	.4813	.0040	.2168	1,28	.6451
31	.4922	.4810	.0112	.6392	1,29	.4305	.4962	.4922	.0040	.2221	1,28	.6411

TABLE 23 PAGE 2

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 6 GEOMETRY

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.4884	.4810	.0074	.4170	1,29	.5235	.5148	.4884	.0264	1.5240	1,28	.2273
33	.5583	.4810	.0773	5.0744	1,29	.0320*	.5583	.5583	.0000	.0008	1,28	.9783
34	.4816	.4810	.0005	.0305	1,29	.8625	.4861	.4816	.0045	.2478	1,28	.6225
35	.5156	.4810	.0346	2.0723	1,29	.1607	.5207	.5156	.0051	.2953	1,28	.5911
36	.4811	.4810	.0001	.0049	1,29	.9449	.5025	.4811	.0213	1.2012	1,28	.2824
37	.4811	.4810	.0001	.0049	1,29	.9449	.5025	.4811	.0213	1.2012	1,28	.2824
38	.4811	.4810	.0001	.0036	1,29	.9523	.4831	.4811	.0020	.1060	1,28	.7472
39	.4824	.4810	.0013	.0742	1,29	.7872	.4824	.4824	.0000	.0000	1,28	1.0000
40	.4842	.4810	.0032	.1804	1,29	.6742	.4844	.4842	.0001	.0057	1,28	.9404
41	.4812	.4810	.0001	.0081	1,29	.9291	.4813	.4812	.0002	.0089	1,28	.9254
42	.5882	.4810	.1071	7.5438	1,29	.0102*	.5924	.5882	.0042	.2896	1,28	.5947
43	.5152	.4810	.0342	2.0453	1,29	.1634	.5258	.5152	.0105	.6218	1,28	.4370
44	.4813	.4810	.0002	.0133	1,29	.9091	.5377	.4813	.0564	3.4147	1,28	.0752
45	.4944	.4810	.0133	.7656	1,29	.3888	.4985	.4944	.0042	.2317	1,28	.6340
46	.4913	.4810	.0103	.5849	1,29	.4506	.5430	.4913	.0517	3.1685	1,28	.0859
47	.4827	.4810	.0016	.0910	1,29	.7650	.4898	.4827	.0071	.3899	1,28	.5374
48	.4813	.4810	.0002	.0121	1,29	.9130	.4813	.4813	.0001	.0033	1,28	.9545
49	.4825	.4810	.0014	.0794	1,29	.7801	.4857	.4825	.0032	.1757	1,28	.6783
50	.4871	.4810	.0060	.3409	1,29	.5638	.4871	.4871	.0000	.0004	1,28	.9843
51	.5535	.4810	.0724	4.7053	1,29	.0384*	.5576	.5535	.0041	.2587	1,28	.6150
52	.5876	.4810	.1066	7.4951	1,29	.0105*	.5883	.5876	.0007	.0474	1,28	.8293
53	.4946	.4810	.0136	.7808	1,29	.3842	.4953	.4946	.0007	.0362	1,28	.8505
54	.4973	.4810	.0163	.9384	1,29	.3407	.4974	.4973	.0001	.0038	1,28	.9513
55	.4923	.4810	.0113	.6438	1,29	.4289	.5318	.4923	.0395	2.3620	1,28	.1355
56	.4819	.4810	.0008	.0460	1,29	.8316	.4886	.4819	.0068	.3716	1,28	.5470
57	.5038	.4810	.0227	1.3274	1,29	.2587	.5116	.5038	.0079	.4522	1,28	.5068
58	.4811	.4810	.0001	.0033	1,29	.9545	.4813	.4811	.0002	.0113	1,28	.9162
59	.4923	.4810	.0113	.6439	1,29	.4288	.4924	.4923	.0001	.0051	1,28	.9438
60	.4816	.4810	.0006	.0331	1,29	.8569	.4957	.4816	.0141	.7838	1,28	.3835
61	.4890	.4810	.0079	.4508	1,29	.5072	.5351	.4890	.0461	2.7778	1,28	.1067
62	.4907	.4810	.0097	.5524	1,29	.4633	.5090	.4907	.0183	1.0436	1,28	.3157

TABLE 24 PAGE 1

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 7 TOTAL

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.6938	.6819	.0119	1.1314	1,29	.2963	.7185	.6938	.0247	2.4559	1,28	.1285
2	.7161	.6819	.0342	3.4933	1,29	.0717	.7270	.7161	.0109	1.1194	1,28	.2991
3	.6844	.6819	.0026	.2368	1,29	.6302	.7026	.6844	.0181	1.7049	1,28	.2023
4	.6905	.6819	.0087	.8116	1,29	.3751	.6930	.6905	.0024	.2216	1,28	.6415
5	.6933	.6819	.0114	1.0797	1,29	.3074	.7125	.6933	.0192	1.8699	1,28	.1824
6	.6862	.6819	.0043	.3986	1,29	.5328	.6863	.6862	.0001	.0090	1,28	.9252
7	.6846	.6819	.0027	.2476	1,29	.6225	.6906	.6846	.0061	.5496	1,28	.4647
8	.7137	.6819	.0318	3.2250	1,29	.0829	.7151	.7137	.0014	.1406	1,28	.7105
9	.6822	.6819	.0003	.0314	1,29	.8607	.6881	.6822	.0059	.5296	1,28	.4728
10	.7078	.6819	.0259	2.5744	1,29	.1194	.7085	.7078	.0007	.0700	1,28	.7933
11	.6822	.6819	.0003	.0267	1,29	.8713	.6973	.6822	.0151	1.3977	1,28	.2471
12	.6867	.6819	.0049	.4511	1,29	.5071	.6946	.6867	.0079	.7212	1,28	.4030
13	.6969	.6819	.0151	1.4412	1,29	.2397	.6988	.6969	.0019	.1776	1,28	.6767
14	.6907	.6819	.0088	.8295	1,29	.3699	.7347	.6907	.0440	4.6448	1,28	.0399*
15	.6820	.6819	.0002	.0164	1,29	.8991	.6846	.6820	.0026	.2267	1,28	.6377
16	.7226	.6819	.0407	4.2543	1,29	.0402*	.7449	.7226	.0223	2.4500	1,28	.1288
17	.6904	.6819	.0085	.8002	1,29	.3784	.6904	.6904	.0000	.0000	1,28	1.0000
18	.7018	.6819	.0199	1.9333	1,29	.1750	.7018	.7018	.0000	.0000	1,28	1.0000
19	.7126	.6819	.0308	3.1063	1,29	.0885	.7217	.7126	.0090	.9089	1,28	.3486
20	.6887	.6819	.0068	.6317	1,29	.4332	.6898	.6887	.0011	.1026	1,28	.7511
21	.7130	.6819	.0311	3.1436	1,29	.0867	.7130	.7130	.0000	.0032	1,28	.9555
22	.6874	.6819	.0056	.5161	1,29	.4782	.6979	.6874	.0105	.9692	1,28	.3333
23	.6825	.6819	.0006	.0543	1,29	.8174	.7042	.6825	.0217	2.0580	1,28	.1625
24	.7157	.6819	.0339	3.4548	1,29	.0732	.7202	.7157	.0045	.4511	1,28	.5073
25	.7211	.6819	.0392	4.0735	1,29	.0529	.7219	.7211	.0008	.0814	1,28	.7775
26	.6842	.6819	.0024	.2162	1,29	.6455	.6856	.6842	.0013	.1184	1,28	.7334
27	.7112	.6819	.0294	2.9501	1,29	.0965	.7186	.7112	.0074	.7323	1,28	.3994
28	.7112	.6819	.0294	2.9501	1,29	.0965	.7186	.7112	.0074	.7323	1,28	.3994
29	.7112	.6819	.0294	2.9501	1,29	.0965	.7186	.7112	.0074	.7323	1,28	.3994
30	.6853	.6819	.0035	.3206	1,29	.5756	.6867	.6853	.0013	.1178	1,28	.7340
31	.6847	.6819	.0028	.2573	1,29	.6158	.6921	.6847	.0074	.6748	1,28	.4183

TABLE 24 PAGE 2

CONTRIBUTIONS OF THE TPOR MEAN AND THE TPOR SQUARED MEAN AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 7 TOTAL

	MEAN						SQUARED MEAN					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.6883	.6819	.0064	.5982	1,29	.4455	.6919	.6883	.0036	.3237	1,28	.5739
33	.7412	.6819	.0593	6.6419	1,29	.0153*	.7608	.7412	.0196	2.2949	1,28	.1410
34	.7210	.6819	.0391	4.0683	1,29	.0530	.7215	.7210	.0005	.0468	1,28	.8305
35	.6836	.6819	.0017	.1582	1,29	.6938	.6836	.6836	.0000	.0001	1,28	.9921
36	.6892	.6819	.0074	.6859	1,29	.4143	.7324	.6892	.0432	4.5153	1,28	.0426*
37	.6892	.6819	.0074	.6859	1,29	.4143	.7324	.6892	.0432	4.5153	1,28	.0426*
38	.6819	.6819	.0001	.0067	1,29	.9352	.7083	.6819	.0264	2.5300	1,28	.1229
39	.7080	.6819	.0262	2.5984	1,29	.1178	.7080	.7080	.0000	.0000	1,28	1.0000
40	.7139	.6819	.0321	3.2509	1,29	.0818	.7159	.7139	.0020	.1929	1,28	.6639
41	.6993	.6819	.0174	1.6789	1,29	.2053	.7032	.6993	.0039	.3705	1,28	.5476
42	.6836	.6819	.0017	.1594	1,29	.6927	.6864	.6836	.0028	.2534	1,28	.6186
43	.6821	.6819	.0002	.0182	1,29	.8936	.6928	.6821	.0107	.9780	1,28	.3312
44	.6880	.6819	.0061	.5656	1,29	.4581	.7011	.6880	.0131	1.2276	1,28	.2775
45	.6892	.6819	.0074	.6889	1,29	.4135	.6894	.6892	.0002	.0157	1,28	.9011
46	.6829	.6819	.0010	.0903	1,29	.7660	.6942	.6829	.0114	1.0415	1,28	.3162
47	.6821	.6819	.0002	.0179	1,29	.8945	.6847	.6821	.0026	.2305	1,28	.6349
48	.6886	.6819	.0068	.6300	1,29	.4338	.7002	.6886	.0116	1.0820	1,28	.3071
49	.6851	.6819	.0033	.3000	1,29	.5880	.7050	.6851	.0199	1.8909	1,28	.1800
50	.6972	.6819	.0153	1.4637	1,29	.2361	.6986	.6972	.0015	.1367	1,28	.7144
51	.6868	.6819	.0049	.4526	1,29	.5064	.6871	.6868	.0004	.0328	1,28	.8576
52	.6996	.6819	.0177	1.7120	1,29	.2010	.7129	.6996	.0133	1.2949	1,28	.2648
53	.7262	.6819	.0443	4.6902	1,29	.0387*	.7334	.7262	.0072	.7608	1,28	.3905
54	.6938	.6819	.0119	1.1300	1,29	.2966	.6950	.6938	.0012	.1081	1,28	.7447
55	.6867	.6819	.0049	.4503	1,29	.5075	.6881	.6867	.0013	.1189	1,28	.7329
56	.6997	.6819	.0178	1.7194	1,29	.2001	.7001	.6997	.0004	.0381	1,28	.8467
57	.6822	.6819	.0004	.0342	1,29	.8546	.6827	.6822	.0004	.0374	1,28	.8481
58	.7431	.6819	.0612	6.9114	1,29	.0136*	.7432	.7431	.0001	.0069	1,28	.9342
59	.6838	.6819	.0019	.1752	1,29	.6786	.6839	.6838	.0001	.0088	1,28	.9259
60	.6937	.6819	.0118	1.1166	1,29	.2994	.6949	.6937	.0013	.1164	1,28	.7356
61	.6884	.6819	.0065	.6054	1,29	.4428	.6960	.6884	.0077	.7867	1,28	.4077
62	.6922	.6819	.0103	.9733	1,29	.3320	.6934	.6922	.0012	.1094	1,28	.7433

TABLE 25 PAGE 1

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 1 BASIC MULTIPLICATION

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.5017	.4606	.0411	2.2265	1,27	.1473	.5019	.5017	.0001	.0065	1,26	.9365
2	.4981	.4981	.0000	.0000	1,271	.0000	.5102	.4981	.0121	.6409	1,26	.4306
3	.5849	.5802	.0047	.3028	1,27	.5866	.5987	.5849	.0139	.9000	1,26	.3515
4	.4757	.4754	.0003	.0157	1,27	.9013	.4807	.4757	.0050	.2520	1,26	.6199
5	.4885	.4797	.0088	.4650	1,27	.5011	.4907	.4885	.0022	.1109	1,26	.7418
6	.5199	.5177	.0021	.1190	1,27	.7327	.5209	.5199	.0010	.0568	1,26	.8134
7	.4687	.4657	.0030	.1519	1,27	.6998	.4695	.4687	.0008	.0405	1,26	.8422
8	.4678	.4634	.0043	.2199	1,27	.6429	.4683	.4678	.0005	.0237	1,26	.8788
9	.4686	.4686	.0000	.0000	1,271	.0000	.4686	.4686	.0000	.0000	1,261	.0000
10	.5417	.5384	.0032	.1911	1,27	.6655	.5442	.5417	.0026	.1456	1,26	.7059
11	.5335	.4746	.0589	3.4112	1,27	.0757	.5337	.5335	.0001	.0082	1,26	.9284
12	.5337	.5098	.0247	1.4319	1,27	.2419	.5357	.5337	.0020	.1117	1,26	.7409
13	.5264	.4805	.0459	2.6176	1,27	.1173	.5277	.5264	.0013	.0690	1,26	.7949
14	.5205	.4912	.0293	1.6527	1,27	.2095	.5391	.5205	.0186	1.0506	1,26	.3148
15	.5174	.5174	.0000	.0000	1,271	.0000	.5174	.5174	.0000	.0000	1,261	.0000
16	.5338	.5338	.0000	.0000	1,271	.0000	.5397	.5338	.0059	.3337	1,26	.5684
17	.4680	.4680	.0000	.0000	1,271	.0000	.4680	.4680	.0000	.0000	1,261	.0000
18	.4619	.4619	.0000	.0000	1,271	.0000	.4619	.4619	.0000	.0000	1,261	.0000
19	.5536	.5189	.0348	2.1032	1,27	.1585	.5539	.5536	.0002	.0124	1,26	.9121
20	.4640	.4639	.0001	.0028	1,27	.9580	.4640	.4640	.0000	.0000	1,261	.0000
21	.4750	.4673	.0077	.3946	1,27	.5352	.5019	.4750	.0269	1.4044	1,26	.2467
22	.4713	.4698	.0015	.0761	1,27	.7848	.4763	.4713	.0050	.2475	1,26	.6230
23	.5152	.4879	.0273	1.5199	1,27	.2283	.5269	.5152	.0117	.6446	1,26	.4293
24	.4642	.4642	.0000	.0012	1,27	.9728	.4645	.4642	.0002	.0104	1,26	.9195
25	.5129	.4791	.0338	1.8747	1,27	.1822	.5635	.5129	.0506	3.0145	1,26	.0944
26	.4980	.4620	.0360	1.9375	1,27	.1753	.5023	.4980	.0043	.2236	1,26	.6403
27	.4637	.4637	.0000	.0000	1,271	.0000	.4637	.4637	.0000	.0000	1,261	.0000
28	.4637	.4637	.0000	.0000	1,271	.0000	.4637	.4637	.0000	.0000	1,261	.0000
29	.4637	.4637	.0000	.0000	1,271	.0000	.4637	.4637	.0000	.0000	1,261	.0000
30	.4840	.4840	.0000	.0000	1,271	.0000	.4851	.4840	.0011	.0570	1,26	.8132
31	.5006	.4641	.0365	1.9725	1,27	.1716	.5009	.5006	.0003	.0161	1,26	.9000

TABLE 25 PAGE 2

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 1 BASIC MULTIPLICATION

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.4704	.4619	.0085	.4326	1,27	.5163	.4847	.4704	.0143	.7216	1,26	.4034
33	.4997	.4747	.0250	1.3497	1,27	.2555	.5010	.4997	.0013	.0678	1,26	.7966
34	.5265	.4777	.0486	2.7800	1,27	.1070	.5298	.5265	.0033	.1847	1,26	.6709
35	.5127	.5019	.0108	.5965	1,27	.4466	.5261	.5127	.0134	.7369	1,26	.3985
36	.5230	.4857	.0373	2.1102	1,27	.1578	.5230	.5230	.0000	.0001	1,26	.9909
37	.5230	.4857	.0373	2.1102	1,27	.1578	.5230	.5230	.0000	.0001	1,26	.9909
38	.5598	.5433	.0165	1.0105	1,27	.3237	.5968	.5598	.0370	2.3834	1,26	.1347
39	.5898	.5898	.0000	.0000	1,271	.0000	.5898	.5898	.0000	.0000	1,261	.0000
40	.4879	.4699	.0179	.9450	1,27	.3396	.4905	.4879	.0026	.1352	1,26	.7161
41	.4840	.4736	.0105	.5472	1,27	.4659	.4914	.4840	.0074	.3763	1,26	.5449
42	.5426	.5208	.0218	1.2872	1,27	.2665	.5445	.5426	.0019	.1087	1,26	.7442
43	.4753	.4643	.0111	.5694	1,27	.4570	.4753	.4753	.0000	.0000	1,26	.9956
44	.4866	.4866	.0000	.0000	1,271	.0000	.4866	.4866	.0000	.0000	1,261	.0000
45	.4912	.4904	.0008	.0415	1,27	.8402	.4918	.4912	.0006	.0299	1,26	.8641
46	.6119	.5388	.0730	5.0794	1,27	.0325*	.6139	.6119	.0021	.1399	1,26	.7115
47	.5207	.4907	.0300	1.6901	1,27	.2046	.5692	.5207	.0486	2.9307	1,26	.0988
48	.5037	.5028	.0009	.0473	1,27	.8295	.5045	.5037	.0008	.0410	1,26	.8412
49	.4663	.4662	.0001	.0041	1,27	.9496	.4674	.4663	.0011	.0533	1,26	.8191
50	.5000	.4826	.0173	.9366	1,27	.3417	.5091	.5000	.0092	.4859	1,26	.4919
51	.5212	.5056	.0157	.8836	1,27	.3556	.5235	.521	.0022	.1225	1,26	.7292
52	.4876	.4731	.0145	.7638	1,27	.3899	.4881	.4876	.0006	.0282	1,26	.8680
53	.5439	.5281	.0159	.9384	1,27	.3413	.5565	.5439	.0126	.7358	1,26	.3989
54	.5179	.4951	.0229	1.2805	1,27	.2678	.5242	.5179	.0062	.3395	1,26	.5651
55	.4976	.4618	.0357	1.9202	1,27	.1772	.5000	.4976	.0024	.1246	1,26	.7269
56	.5074	.5020	.0054	.2966	1,27	.5905	.5076	.5074	.0002	.0108	1,26	.9181
57	.4947	.4710	.0237	1.2664	1,27	.2703	.4984	.4947	.0037	.1907	1,26	.6659
58	.4961	.4731	.0230	1.2322	1,27	.2768	.5052	.4961	.0091	.4759	1,26	.4964
59	.5371	.5242	.0129	.7529	1,27	.3932	.5384	.5371	.0013	.0710	1,26	.7919
60	.5223	.5119	.0103	.5849	1,27	.4510	.5428	.5223	.0205	1.1667	1,26	.2900
61	.4697	.4695	.0002	.0080	1,27	.9294	.4705	.4697	.0008	.0375	1,26	.8479
62	.4937	.4861	.0076	.4071	1,27	.5288	.4938	.4937	.0000	.0010	1,26	.9755

TABLE 26 PAGE 1

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 2 FACTORS AND PRIME NUMBERS

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.3896	.3753	.0143	.6337	1,27	.4329	.3897	.3896	.0001	.0032	1,26	.9554
2	.5786	.5786	.0000	.0000	1,271	.0000	.6112	.5786	.0326	2.1820	1,26	.1516
3	.3431	.3384	.0047	.1917	1,27	.6650	.3622	.3431	.0191	.7796	1,26	.3854
4	.4175	.3373	.0801	3.7138	1,27	.0645	.4274	.4175	.0100	.4524	1,26	.5071
5	.3523	.3518	.0005	.0217	1,27	.8839	.3557	.3523	.0034	.1371	1,26	.7142
6	.3711	.3401	.0310	1.3319	1,27	.2586	.3738	.3711	.0026	.1090	1,26	.7440
7	.3971	.3908	.0063	.2836	1,27	.5987	.3987	.3971	.0016	.0690	1,26	.7949
8	.3598	.3526	.0072	.3017	1,27	.5873	.3603	.3598	.0006	.0228	1,26	.8810
9	.3628	.3628	.0000	.0000	1,271	.0000	.3628	.3628	.0000	.0000	1,261	.0000
10	.4129	.3593	.0536	2.4665	1,27	.1279	.4209	.4129	.0079	.3561	1,26	.5558
11	.3672	.3541	.0131	.5608	1,27	.4604	.3807	.3672	.0135	.5649	1,26	.4590
12	.4367	.4267	.0100	.4772	1,27	.4956	.4383	.4367	.0016	.0750	1,26	.7863
13	.3871	.3867	.0004	.0172	1,27	.8966	.3990	.3871	.0119	.5160	1,26	.4790
14	.3699	.3462	.0237	1.0177	1,27	.3220	.3725	.3699	.0026	.1084	1,26	.7447
15	.3912	.3912	.0000	.0000	1,271	.0000	.3912	.3912	.0000	.0000	1,261	.0000
16	.5133	.5133	.0000	.0000	1,271	.0000	.5765	.5133	.0632	3.8797	1,26	.0596
17	.3710	.3710	.0000	.0000	1,271	.0000	.3710	.3710	.0000	.0000	1,261	.0000
18	.3363	.3363	.0000	.0000	1,271	.0000	.3363	.3363	.0000	.0000	1,261	.0000
19	.4627	.4542	.0084	.4233	1,27	.5208	.4681	.4627	.0055	.2672	1,26	.6096
20	.3422	.3415	.0007	.0291	1,27	.8658	.3422	.3422	.0000	.0000	1,261	.0000
21	.3865	.3645	.0220	.9702	1,27	.3334	.4155	.3865	.0290	1.2885	1,26	.2667
22	.3754	.3449	.0306	1.3212	1,27	.2605	.3796	.3754	.0041	.1732	1,26	.6807
23	.3767	.3600	.0167	.7216	1,27	.4031	.4217	.3767	.0451	2.0271	1,26	.1664
24	.3457	.3456	.0000	.0004	1,27	.9838	.3457	.3457	.0000	.0000	1,26	.9841
25	.3951	.3693	.0258	1.1496	1,27	.2931	.4083	.3951	.0133	.5830	1,26	.4520
26	.3928	.3609	.0319	1.4177	1,27	.2441	.3928	.3928	.0000	.0002	1,26	.9888
27	.3392	.3392	.0000	.0000	1,271	.0000	.3392	.3392	.0000	.0000	1,261	.0000
28	.3392	.3392	.0000	.0000	1,271	.0000	.3392	.3392	.0000	.0000	1,261	.0000
29	.3392	.3392	.0000	.0000	1,271	.0000	.3392	.3392	.0000	.0000	1,261	.0000
30	.3540	.3540	.0000	.0000	1,271	.0000	.3552	.3540	.0011	.0457	1,26	.8324
31	.4085	.3998	.0087	.3960	1,27	.5344	.4273	.4085	.0188	.8535	1,26	.3641

TABLE 26 PAGE 2

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 2 FACTORS AND PRIME NUMBERS

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.3710	.3435	.0275	1.1789	1,27	.2872	.4163	.3710	.0454	2.0209	1,26	.1670
33	.5513	.5279	.0234	1.4070	1,27	.2459	.5610	.5513	.0097	.5744	1,26	.4553
34	.4132	.4115	.0017	.0768	1,27	.7837	.4652	.4132	.0520	2.5270	1,26	.1240
35	.3762	.3382	.0379	1.6409	1,27	.2111	.3841	.3762	.0080	.3358	1,26	.5673
36	.3958	.3445	.0513	2.2927	1,27	.1416	.3962	.3958	.0005	.0196	1,26	.8899
37	.3958	.3445	.0513	2.2927	1,27	.1416	.3962	.3958	.0005	.0196	1,26	.8899
38	.3885	.3599	.0286	1.2651	1,27	.2706	.3922	.3885	.0036	.1541	1,26	.6978
39	.3707	.3707	.0000	.0000	1,271	.0000	.3707	.3707	.0000	.0000	1,261	.0000
40	.3528	.3479	.0050	.2077	1,27	.6522	.3585	.3528	.0056	.2278	1,26	.6372
41	.3385	.3380	.0005	.0196	1,27	.8898	.4150	.3385	.0765	3.4015	1,26	.0766
42	.3661	.3641	.0020	.0870	1,27	.7703	.3806	.3661	.0145	.6072	1,26	.4429
43	.3808	.3578	.0231	1.0059	1,27	.3248	.3822	.3808	.0013	.0566	1,26	.8138
44	.3597	.3597	.0000	.0000	1,271	.0000	.3597	.3597	.0000	.0000	1,261	.0000
45	.4229	.3568	.0661	3.0917	1,27	.0900	.4266	.4229	.0037	.1698	1,26	.6837
46	.3550	.3388	.0162	.6777	1,27	.4176	.3580	.3550	.0030	.1209	1,26	.7308
47	.3431	.3422	.0009	.0378	1,27	.8474	.3648	.3431	.0216	.8853	1,26	.3554
48	.3694	.3461	.0233	.9975	1,27	.3268	.3718	.3694	.0025	.1023	1,26	.7516
49	.3968	.3968	.0000	.0008	1,27	.9783	.3975	.3968	.0007	.0305	1,26	.8627
50	.3770	.3708	.0063	.2724	1,27	.6060	.4045	.3770	.0274	1.1979	1,26	.2838
51	.3798	.3653	.0145	.6322	1,27	.4335	.3987	.3798	.0189	.8171	1,26	.3743
52	.3567	.3411	.0156	.6564	1,27	.4249	.3634	.3567	.0066	.2703	1,26	.6075
53	.4196	.3896	.0300	1.3950	1,27	.2479	.4528	.4196	.0332	1.5774	1,26	.2203
54	.4177	.3495	.0683	3.1656	1,27	.0865	.4197	.4177	.0020	.0880	1,26	.7690
55	.4330	.3483	.0847	4.0349	1,27	.0547	.4965	.4330	.0635	3.2770	1,26	.0818
56	.3411	.3403	.0009	.0353	1,27	.8523	.3461	.3411	.0049	.1961	1,26	.6615
57	.3690	.3594	.0096	.4092	1,27	.5278	.3840	.3690	.0150	.6325	1,26	.4336
58	.3731	.3729	.0001	.0057	1,27	.9406	.3733	.3731	.0002	.0100	1,26	.9212
59	.3497	.3399	.0097	.4040	1,27	.5304	.3859	.3497	.0362	1.5340	1,26	.2266
60	.4325	.4002	.0323	1.5377	1,27	.2256	.4508	.4325	.0183	.8653	1,26	.3608
61	.4054	.3761	.0294	1.3342	1,27	.2582	.4062	.4054	.0008	.0352	1,26	.8526
62	.3599	.3522	.0077	.3256	1,27	.5730	.3797	.3599	.0199	.8323	1,26	.3700

TABLE 27 PAGE 1

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 3 BASIC DIVISION

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.4726	.4491	.0235	1.2036	1,27	.2823	.4892	.4726	.0166	.8461	1,26	.3661
2	.3846	.3846	.0000	.0000	1,271	.0000	.4334	.3846	.0488	2.2381	1,26	.1467
3	.5093	.5084	.0009	.0491	1,27	.8263	.5333	.5093	.0240	1.3384	1,26	.2578
4	.3987	.3615	.0371	1.6677	1,27	.2075	.4006	.3987	.0019	.0826	1,26	.7760
5	.3891	.3882	.0010	.0425	1,27	.8383	.4222	.3891	.0331	1.4875	1,26	.2336
6	.3852	.3707	.0145	.6355	1,27	.4323	.3863	.3852	.0011	.0448	1,26	.8340
7	.3747	.3674	.0073	.3161	1,27	.5786	.3816	.3747	.0069	.2896	1,26	.5950
8	.4350	.4206	.0144	.6884	1,27	.4140	.4909	.4350	.0558	2.8520	1,26	.1032
9	.3788	.3788	.0000	.0000	1,271	.0000	.3788	.3788	.0000	.0000	1,261	.0000
10	.4435	.4260	.0175	.8506	1,27	.3646	.4556	.4435	.0121	.5770	1,26	.4543
11	.3946	.3909	.0037	.1658	1,27	.6871	.3962	.3946	.0016	.0708	1,26	.7923
12	.3893	.3749	.0144	.6368	1,27	.4318	.3968	.3893	.0075	.3220	1,26	.5753
13	.4320	.4313	.0007	.0342	1,27	.8546	.4430	.4320	.0110	.5154	1,26	.4792
14	.4520	.4087	.0433	2.1322	1,27	.1558	.4652	.4520	.0132	.6411	1,26	.4306
15	.3738	.3738	.0000	.0000	1,271	.0000	.3738	.3738	.0000	.0000	1,261	.0000
16	.4395	.4395	.0000	.0000	1,271	.0000	.4655	.4395	.0260	1.2656	1,26	.2709
17	.4256	.4256	.0000	.0000	1,271	.0000	.4256	.4256	.0000	.0000	1,261	.0000
18	.3920	.3920	.0000	.0000	1,271	.0000	.3920	.3920	.0000	.0000	1,261	.0000
19	.4560	.4482	.0078	.3887	1,27	.5382	.4915	.4560	.0354	1.8121	1,26	.1899
20	.3660	.3656	.0004	.0170	1,27	.8972	.3660	.3660	.0000	.0000	1,261	.0000
21	.4641	.4239	.0401	2.0223	1,27	.1664	.5558	.4641	.0917	5.3667	1,26	.0287*
22	.3898	.3753	.0145	.6404	1,27	.4305	.4333	.3898	.0436	1.9993	1,26	.1692
23	.4537	.4496	.0041	.2004	1,27	.6579	.4543	.4537	.0006	.0298	1,26	.8642
24	.4405	.4359	.0046	.2236	1,27	.6401	.4542	.4405	.0137	.6544	1,26	.4259
25	.5633	.5516	.0117	.7220	1,27	.4030	.5633	.5633	.0000	.0005	1,26	.9827
26	.4161	.3726	.0434	2.0085	1,27	.1679	.4166	.4161	.0006	.0265	1,26	.8720
27	.4330	.4330	.0000	.0000	1,271	.0000	.4330	.4330	.0000	.0000	1,261	.0000
28	.4330	.4330	.0000	.0000	1,271	.0000	.4330	.4330	.0000	.0000	1,261	.0000
29	.4330	.4330	.0000	.0000	1,271	.0000	.4330	.4330	.0000	.0000	1,261	.0000
30	.3691	.3691	.0000	.0000	1,271	.0000	.4156	.3691	.0465	2.0670	1,26	.1624
31	.4034	.4014	.0020	.0894	1,27	.7673	.4293	.4034	.0259	1.1797	1,26	.2874

TABLE 27 PAGE 2

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 3 BASIC DIVISION

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.4278	.3955	.0323	1.5250	1,27	.2275	.4342	.4278	.0064	.2943	1,26	.5921
33	.5779	.5727	.0052	.3305	1,27	.5701	.5828	.5779	.0049	.3051	1,26	.5854
34	.4923	.4649	.0274	1.4583	1,27	.2377	.5566	.4923	.0643	3.7681	1,26	.0632
35	.4847	.4826	.0021	.1107	1,27	.7419	.4860	.4847	.0013	.0635	1,26	.8031
36	.5325	.5100	.0226	1.3034	1,27	.2636	.5392	.5325	.0066	.3751	1,26	.5456
37	.5325	.5100	.0226	1.3034	1,27	.2636	.5392	.5325	.0066	.3751	1,26	.5456
38	.4152	.3776	.0375	1.7329	1,27	.1991	.4172	.4152	.0020	.0914	1,26	.7648
39	.3704	.3704	.0000	.0000	1,271	.0000	.3704	.3704	.0000	.0000	1,261	.0000
40	.4775	.4773	.0002	.0097	1,27	.9223	.4900	.4775	.0125	.6370	1,26	.4320
41	.4165	.3931	.0234	1.0839	1,27	.3071	.4510	.4165	.0344	1.6306	1,26	.2129
42	.4723	.4104	.0619	3.1665	1,27	.0864	.4981	.4723	.0258	1.3370	1,26	.2581
43	.4231	.3997	.0234	1.0959	1,27	.3044	.4507	.4231	.0275	1.3031	1,26	.2641
44	.3818	.3818	.0000	.0000	1,271	.0000	.3818	.3818	.0000	.0000	1,261	.0000
45	.3752	.3750	.0002	.0076	1,27	.9311	.3947	.3752	.0194	.8346	1,26	.3693
46	.3898	.3695	.0203	.8971	1,27	.3520	.4346	.3898	.0448	2.0606	1,26	.1631
47	.3931	.3930	.0001	.0034	1,27	.9537	.4653	.3931	.0722	3.5123	1,26	.0722
48	.4552	.4414	.0139	.6866	1,27	.4146	.4626	.4552	.0073	.3546	1,26	.5567
49	.4113	.4018	.0095	.4345	1,27	.5154	.4126	.4113	.0013	.0567	1,26	.8137
50	.4618	.4431	.0188	.9420	1,27	.3404	.5133	.4618	.0514	2.7470	1,26	.1095
51	.4174	.4025	.0149	.6907	1,27	.4132	.4579	.4174	.0405	1.9431	1,26	.1751
52	.4532	.4508	.0024	.1178	1,27	.7341	.4848	.4532	.0316	1.5941	1,26	.2179
53	.4337	.4274	.0063	.2999	1,27	.5885	.5750	.4337	.1413	8.6411	1,26	.0068*
54	.4301	.3667	.0634	3.0022	1,27	.0946	.4401	.4301	.0101	.4676	1,26	.5002
55	.4360	.4313	.0047	.2253	1,27	.6388	.5293	.4360	.0933	5.1553	1,26	.0317*
56	.4924	.4459	.0465	2.4749	1,27	.1273	.5016	.4924	.0092	.4784	1,26	.4953
57	.4410	.3799	.0611	2.9532	1,27	.0972	.4418	.4410	.0008	.0392	1,26	.8447
58	.5780	.5777	.0002	.0147	1,27	.9042	.5817	.5780	.0037	.2326	1,26	.6337
59	.4341	.3609	.0732	3.4904	1,27	.0726	.4345	.4341	.0004	.0192	1,26	.8909
60	.4544	.3731	.0813	4.0225	1,27	.0550	.4560	.4544	.0016	.0776	1,26	.7828
61	.4745	.3853	.0892	4.5835	1,27	.0415*	.4911	.4745	.0166	.8461	1,26	.3661
62	.4525	.3971	.0554	2.7311	1,27	.1100	.4543	.4525	.0019	.0888	1,26	.7681

TABLE 28 PAGE 1

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 4 BASIC FRACTIONS

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.1769	.1649	.0120	.3923	1,27	.5364	.2389	.1769	.0620	2.1183	1,26	.1575
2	.1831	.1831	.0000	.0000	1,271	.0000	.1939	.1831	.0108	.3475	1,26	.5606
3	.2682	.2635	.0047	.1728	1,27	.6810	.3108	.2682	.0425	1.6051	1,26	.2164
4	.2134	.1648	.0486	1.6690	1,27	.2073	.2142	.2134	.0008	.0254	1,26	.8747
5	.3526	.3458	.0069	.2863	1,27	.5970	.3526	.3526	.0000	.0001	1,26	.9907
6	.1641	.1598	.0044	.1406	1,27	.7106	.1894	.1641	.0253	.8105	1,26	.3762
7	.2188	.1552	.0636	2.1985	1,27	.1497	.4113	.2188	.1925	8.5032	1,26	.0072*
8	.1563	.1561	.0002	.0059	1,27	.9394	.1662	.1563	.0100	.3104	1,26	.5822
9	.1559	.1559	.0000	.0000	1,271	.0000	.1559	.1559	.0000	.0000	1,261	.0000
10	.1692	.1682	.0010	.0340	1,27	.8551	.1870	.1692	.0178	.5690	1,26	.4574
11	.1799	.1625	.0173	.5711	1,27	.4564	.1802	.1799	.0004	.0115	1,26	.9156
12	.1637	.1636	.0002	.0049	1,27	.9448	.1898	.1637	.0261	.8376	1,26	.3685
13	.3416	.1550	.1866	7.6538	1,27	.0101*	.3735	.3416	.0319	1.3223	1,26	.2606
14	.2827	.1573	.1254	4.7195	1,27	.0388*	.3646	.2827	.0819	3.3503	1,26	.0787
15	.2979	.2979	.0000	.0000	1,271	.0000	.2979	.2979	.0000	.0000	1,261	.0000
16	.1881	.1881	.0000	.0000	1,271	.0000	.2088	.1881	.0207	.6792	1,26	.4174
17	.1559	.1559	.0000	.0000	1,271	.0000	.1559	.1559	.0000	.0000	1,261	.0000
18	.1935	.1935	.0000	.0000	1,271	.0000	.1935	.1935	.0000	.0000	1,261	.0000
19	.1731	.1656	.0075	.2463	1,27	.6237	.1759	.1731	.0028	.0885	1,26	.7684
20	.1672	.1546	.0126	.4083	1,27	.5282	.1672	.1672	.0000	.0000	1,261	.0000
21	.2114	.1821	.0292	1.0009	1,27	.3260	.2373	.2114	.0259	.8838	1,26	.3558
22	.2237	.2031	.0206	.7167	1,27	.4047	.2241	.2237	.0003	.0114	1,26	.9160
23	.2390	.2389	.0001	.0041	1,27	.9493	.2404	.2390	.0014	.0462	1,26	.8314
24	.1928	.1567	.0361	1.2064	1,27	.2817	.1939	.1928	.0012	.0371	1,26	.8487
25	.4212	.3154	.1058	4.9363	1,27	.0349*	.4244	.4212	.0031	.1412	1,26	.7101
26	.1764	.1750	.0014	.0462	1,27	.8315	.2298	.1764	.0535	1.8050	1,26	.1907
27	.2016	.2016	.0000	.0000	1,271	.0000	.2016	.2016	.0000	.0000	1,261	.0000
28	.2016	.2016	.0000	.0000	1,271	.0000	.2016	.2016	.0000	.0000	1,261	.0000
29	.2016	.2016	.0000	.0000	1,271	.0000	.2016	.2016	.0000	.0000	1,261	.0000
30	.1587	.1587	.0000	.0000	1,271	.0000	.2185	.1587	.0597	1.9870	1,26	.1705
31	.1789	.1672	.0117	.3863	1,27	.5394	.1853	.1789	.0063	.2015	1,26	.6573

TABLE 28 PAGE 2

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 4 BASIC FRACTIONS

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.1620	.1568	.0052	.1666	1,27	.6864	.1707	.1620	.0087	.2722	1,26	.6063
33	.3223	.2939	.0284	1.1297	1,27	.2973	.3366	.3223	.0144	.5631	1,26	.4598
34	.3024	.1518	.1506	5.8278	1,27	.0228*	.3128	.3024	.0104	.3944	1,26	.5354
35	.2966	.2965	.0000	.0014	1,27	.9704	.2986	.2966	.0020	.0754	1,26	.7858
36	.1977	.1838	.0138	.4661	1,27	.5006	.2089	.1977	.0112	.3688	1,26	.5489
37	.1977	.1838	.0138	.4661	1,27	.5006	.2089	.1977	.0112	.3688	1,26	.5489
38	.2018	.1983	.0035	.1188	1,27	.7330	.2126	.2018	.0108	.3554	1,26	.5563
39	.1819	.1819	.0000	.0000	1,271	.0000	.1819	.1819	.0000	.0000	1,261	.0000
40	.1998	.1490	.0509	1.7161	1,27	.2012	.2105	.1998	.0106	.3502	1,26	.5591
41	.1681	.1590	.0091	.2953	1,27	.5913	.1749	.1681	.0069	.2164	1,26	.6457
42	.2402	.1675	.0727	2.5843	1,27	.1196	.2602	.2402	.0200	.7027	1,26	.4095
43	.1651	.1644	.0006	.0200	1,27	.8886	.1948	.1651	.0297	.9595	1,26	.3363
44	.1949	.1949	.0000	.0000	1,271	.0000	.1949	.1949	.0000	.0000	1,261	.0000
45	.2679	.2539	.0140	.5177	1,27	.4780	.2681	.2679	.0001	.0046	1,26	.9462
46	.1952	.1843	.0109	.3660	1,27	.5503	.3032	.1952	.1081	4.0323	1,26	.0551
47	.2617	.2512	.0104	.3821	1,27	.5417	.3232	.2617	.0615	2.3634	1,26	.1363
48	.2239	.1809	.0430	1.4963	1,27	.2318	.2348	.2239	.0108	.3680	1,26	.5494
49	.1903	.1641	.0262	.8720	1,27	.3587	.1971	.1903	.0068	.2208	1,26	.6423
50	.2625	.2186	.0439	1.6056	1,27	.2159	.2635	.2625	.0010	.0364	1,26	.8501
51	.2664	.2017	.0647	2.3825	1,27	.1343	.2852	.2664	.0188	.6844	1,26	.4156
52	.2017	.1874	.0143	.4822	1,27	.4933	.2160	.2017	.0144	.4762	1,26	.4963
53	.2615	.2605	.0010	.0376	1,27	.8478	.2799	.2615	.0184	.6628	1,26	.4230
54	.1745	.1744	.0001	.0034	1,27	.9537	.1984	.1745	.0239	.7755	1,26	.3866
55	.2288	.1870	.0418	1.4627	1,27	.2370	.2365	.2288	.0077	.2638	1,26	.6118
56	.2134	.1774	.0360	1.2370	1,27	.2758	.2158	.2134	.0024	.0784	1,26	.7817
57	.1897	.1844	.0053	.1766	1,27	.6776	.2132	.1897	.0236	.7789	1,26	.3856
58	.2040	.1538	.0502	1.7034	1,27	.2029	.2116	.2040	.0076	.2496	1,26	.6216
59	.1719	.1719	.0000	.0000	1,27	.9946	.1996	.1719	.0278	.9016	1,26	.3511
60	.1501	.1491	.0010	.0325	1,27	.8583	.1645	.1501	.0144	.4472	1,26	.5096
61	.1952	.1684	.0268	.8985	1,27	.3516	.2953	.1952	.1001	3.6930	1,26	.0657
62	.2300	.1979	.0321	1.1267	1,27	.2979	.2706	.2300	.0406	1.4466	1,26	.2399

TABLE 29 PAGE 1

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 5 MEASUREMENT

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.2461	.2299	.0162	.5789	1,27	.4533	.3203	.2461	.0742	2.8372	1,26	.1041
2	.2457	.2457	.0000	.0000	1,271	.0000	.2760	.2457	.0304	1.0909	1,26	.3059
3	.2774	.2412	.0362	1.3519	1,27	.2551	.2833	.2774	.0058	.2116	1,26	.6493
4	.2261	.2241	.0021	.0725	1,27	.7898	.2709	.2261	.0447	1.5951	1,26	.2178
5	.2358	.2358	.0000	.0009	1,27	.9765	.2614	.2358	.0255	.8977	1,26	.3521
6	.3154	.3134	.0020	.0773	1,27	.7831	.3158	.3154	.0004	.0163	1,26	.8993
7	.2339	.2258	.0080	.2833	1,27	.5989	.3062	.2339	.0723	2.7089	1,26	.1118
8	.3075	.2734	.0341	1.3300	1,27	.2589	.3079	.3075	.0004	.0150	1,26	.9034
9	.2413	.2413	.0000	.0000	1,271	.0000	.2413	.2413	.0000	.0000	1,261	.0000
10	.2452	.2243	.0209	.7489	1,27	.3944	.2510	.2452	.0058	.2007	1,26	.6579
11	.2774	.2754	.0020	.0744	1,27	.7870	.2776	.2774	.0002	.0073	1,26	.9327
12	.2717	.2567	.0150	.5565	1,27	.4621	.2767	.2717	.0051	.1816	1,26	.6735
13	.3019	.2820	.0199	.7678	1,27	.3886	.3171	.3019	.0152	.5774	1,26	.4542
14	.3075	.2776	.0299	1.1674	1,27	.2895	.3133	.3075	.0058	.2184	1,26	.6442
15	.2496	.2496	.0000	.0000	1,271	.0000	.2496	.2496	.0000	.0000	1,261	.0000
16	.2678	.2678	.0000	.0000	1,271	.0000	.2770	.2678	.0092	.3315	1,26	.5698
17	.2321	.2321	.0000	.0000	1,271	.0000	.2321	.2321	.0000	.0000	1,261	.0000
18	.2679	.2679	.0000	.0000	1,271	.0000	.2679	.2679	.0000	.0000	1,261	.0000
19	.2697	.2249	.0448	1.6580	1,27	.2088	.2848	.2697	.0151	.5473	1,26	.4660
20	.2586	.2308	.0279	1.0151	1,27	.3226	.2586	.2586	.0000	.0000	1,261	.0000
21	.3200	.3026	.0174	.6903	1,27	.4133	.4318	.3200	.1118	5.1176	1,26	.0323*
22	.3568	.3341	.0227	.9539	1,27	.3374	.3779	.3568	.0211	.8831	1,26	.3560
23	.2367	.2220	.0147	.5212	1,27	.4765	.2703	.2367	.0336	1.1968	1,26	.2840
24	.2468	.2376	.0092	.3314	1,27	.5696	.2469	.2468	.0000	.0013	1,26	.9719
25	.2896	.2549	.0347	1.3196	1,27	.2607	.3062	.2896	.0166	.6228	1,26	.4371
26	.2507	.2468	.0038	.1380	1,27	.7132	.2510	.2507	.0003	.0115	1,26	.9154
27	.2502	.2502	.0000	.0000	1,271	.0000	.2502	.2502	.0000	.0000	1,261	.0000
28	.2502	.2502	.0000	.0000	1,271	.0000	.2502	.2502	.0000	.0000	1,261	.0000
29	.2502	.2502	.0000	.0000	1,271	.0000	.2502	.2502	.0000	.0000	1,261	.0000
30	.3362	.3362	.0000	.0000	1,271	.0000	.3386	.3362	.0024	.0957	1,26	.7595
31	.2826	.2497	.0329	1.2401	1,27	.2753	.2862	.2826	.0036	.1318	1,26	.7195

TABLE 29 PAGE 2

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 5 MEASUREMENT

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.2814	.2668	.0145	.5450	1,27	.4667	.2832	.2814	.0018	.0671	1,26	.7971
33	.2776	.2662	.0114	.4277	1,27	.5187	.3014	.2776	.0238	.8867	1,26	.3550
34	.3066	.2747	.0318	1.2396	1,27	.2754	.3437	.3066	.0371	1.4713	1,26	.2361
35	.2693	.2674	.0019	.0700	1,27	.7933	.2763	.2693	.0070	.2520	1,26	.6199
36	.3331	.3185	.0146	.5893	1,27	.4494	.3520	.3331	.0190	.7613	1,26	.3909
37	.3331	.3185	.0146	.5893	1,27	.4494	.3520	.3331	.0190	.7613	1,26	.3909
38	.2543	.2191	.0352	1.2759	1,27	.2686	.2636	.2543	.0093	.3280	1,26	.5717
39	.2235	.2235	.0000	.0000	1,271	.0000	.2235	.2235	.0000	.0000	1,261	.0000
40	.2691	.2250	.0441	1.6279	1,27	.2129	.2756	.2691	.0065	.2333	1,26	.6331
41	.2469	.2438	.0031	.1108	1,27	.7418	.2596	.2469	.0127	.4457	1,26	.5102
42	.3214	.2441	.0773	3.0777	1,27	.0907	.4452	.3214	.1238	5.7994	1,26	.0234*
43	.3310	.2328	.0982	3.9633	1,27	.0567	.3608	.3310	.0297	1.2092	1,26	.2816
44	.2327	.2327	.0000	.0000	1,271	.0000	.2327	.2327	.0000	.0000	1,261	.0000
45	.2381	.2278	.0103	.3653	1,27	.5506	.2535	.2381	.0154	.5357	1,26	.4708
46	.2241	.2191	.0050	.1738	1,27	.6801	.2268	.2241	.0027	.0900	1,26	.7666
47	.2298	.2297	.0001	.0044	1,27	.9476	.2516	.2298	.0218	.7571	1,26	.3922
48	.3179	.3171	.0008	.0319	1,27	.8595	.3234	.3179	.0055	.2120	1,26	.6490
49	.3519	.3519	.0000	.0002	1,27	.9891	.3730	.3519	.0212	.8776	1,26	.3575
50	.2396	.2284	.0112	.3974	1,27	.5337	.2402	.2396	.0006	.0215	1,26	.8846
51	.2312	.2304	.0008	.0288	1,27	.8666	.2533	.2312	.0221	.7709	1,26	.3880
52	.2497	.2497	.0000	.0004	1,27	.9844	.2579	.2497	.0081	.2848	1,26	.5981
53	.2389	.2318	.0071	.2525	1,27	.6194	.2452	.2389	.0063	.2163	1,26	.6457
54	.2688	.2203	.0485	1.7915	1,27	.1919	.2744	.2688	.0057	.2025	1,26	.6564
55	.2505	.2273	.0232	.8340	1,27	.3692	.2703	.2505	.0198	.7061	1,26	.4084
56	.2408	.2294	.0114	.4057	1,27	.5295	.2416	.2408	.0008	.0288	1,26	.8665
57	.2671	.2653	.0018	.0678	1,27	.7966	.2761	.2671	.0090	.3243	1,26	.5739
58	.2475	.2350	.0126	.4507	1,27	.5077	.2487	.2475	.0012	.0402	1,26	.8427
59	.2351	.2240	.0111	.3921	1,27	.5365	.2359	.2351	.0008	.0262	1,26	.8727
60	.2514	.2220	.0294	1.0611	1,27	.3121	.2549	.2514	.0036	.1239	1,26	.7277
61	.3384	.2488	.0896	3.6582	1,27	.0665	.3559	.3384	.0175	.7067	1,26	.4082
62	.2665	.2648	.0017	.0615	1,27	.8059	.2670	.2665	.0005	.0188	1,26	.8920

TABLE 30 PAGE 1

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 6 GEOMETRY

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.5586	.5579	.0007	.0410	1,27	.8411	.5764	.5586	.0178	1.0945	1,26	.3051
2	.5184	.5184	.0000	.0000	1,271	.0000	.5384	.5184	.0200	1.1282	1,26	.2979
3	.5232	.5073	.0159	.8995	1,27	.3513	.5690	.5232	.0457	2.7587	1,26	.1087
4	.4821	.4819	.0002	.0081	1,27	.9292	.4910	.4821	.0089	.4569	1,26	.5050
5	.5278	.5278	.0000	.0011	1,27	.9744	.5676	.5278	.0398	2.3941	1,26	.1339
6	.5162	.5142	.0020	.1121	1,27	.7404	.5181	.5162	.0019	.1031	1,26	.7507
7	.4953	.4949	.0005	.0243	1,27	.8772	.4989	.4953	.0036	.1871	1,26	.6689
8	.5286	.4834	.0452	2.5893	1,27	.1192	.5370	.5286	.0084	.4710	1,26	.4986
9	.4877	.4877	.0000	.0000	1,271	.0000	.4877	.4877	.0000	.0000	1,261	.0000
10	.5070	.4924	.0146	.8004	1,27	.3789	.5118	.5070	.0048	.2563	1,26	.6169
11	.5423	.5423	.0000	.0013	1,27	.9717	.5545	.5423	.0122	.7103	1,26	.4070
12	.5081	.4980	.0100	.5511	1,27	.4643	.5131	.5081	.0050	.2680	1,26	.6091
13	.5073	.4862	.0211	1.1576	1,27	.2915	.5171	.5073	.0099	.5309	1,26	.4727
14	.5318	.5233	.0085	.4916	1,27	.4892	.5332	.5318	.0014	.0764	1,26	.7844
15	.4828	.4828	.0000	.0000	1,271	.0000	.4828	.4828	.0000	.0000	1,261	.0000
16	.5686	.5686	.0000	.0000	1,271	.0000	.5692	.5686	.0006	.0343	1,26	.8546
17	.4942	.4942	.0000	.0000	1,271	.0000	.4942	.4942	.0000	.0000	1,261	.0000
18	.4827	.4827	.0000	.0000	1,271	.0000	.4827	.4827	.0000	.0000	1,261	.0000
19	.4918	.4884	.0034	.1816	1,27	.6734	.5286	.4918	.0367	2.0265	1,26	.1665
20	.5142	.5024	.0118	.6537	1,27	.4259	.5142	.5142	.0000	.0000	1,261	.0000
21	.5419	.5261	.0159	.9356	1,27	.3420	.6092	.5419	.0673	4.4767	1,26	.0441*
22	.5484	.5468	.0015	.0921	1,27	.7639	.5486	.5484	.0002	.0107	1,26	.9185
23	.5458	.5215	.0244	1.4476	1,27	.2394	.5461	.5458	.0003	.0151	1,26	.9032
24	.4997	.4871	.0126	.6794	1,27	.4170	.5143	.4997	.0146	.7799	1,26	.3853
25	.5214	.5140	.0074	.4192	1,27	.5228	.5322	.5214	.0107	.5952	1,26	.4474
26	.5199	.4886	.0313	1.7624	1,27	.1954	.5255	.5199	.0056	.3072	1,26	.5841
27	.4875	.4875	.0000	.0000	1,271	.0000	.4875	.4875	.0000	.0000	1,261	.0000
28	.4875	.4875	.0000	.0000	1,271	.0000	.4875	.4875	.0000	.0000	1,261	.0000
29	.4875	.4875	.0000	.0000	1,271	.0000	.4875	.4875	.0000	.0000	1,261	.0000
30	.4853	.4853	.0000	.0000	1,271	.0000	.4896	.4853	.0043	.2205	1,26	.6426
31	.4982	.4962	.0020	.1087	1,27	.7442	.4997	.4982	.0015	.0767	1,26	.7840

TABLE 30 PAGE 2

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 6 GEOMETRY

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.5151	.5148	.0002	.0138	1,27	.9074	.5184	.5151	.0034	.1826	1,26	.6727
33	.5583	.5583	.0000	.0008	1,27	.9780	.5614	.5583	.0031	.1831	1,26	.6723
34	.4887	.4861	.0026	.1382	1,27	.7130	.4892	.4887	.0004	.0221	1,26	.8829
35	.5207	.5207	.0000	.0006	1,27	.9808	.6452	.5207	.1245	9.1272	1,26	.0056*
36	.5508	.5025	.0483	2.9027	1,27	.0999	.5589	.5508	.0081	.4774	1,26	.4957
37	.5508	.5025	.0483	2.9027	1,27	.0999	.5589	.5508	.0081	.4774	1,26	.4957
38	.4838	.4831	.0007	.0370	1,27	.8490	.4894	.4838	.0056	.2849	1,26	.5980
39	.4824	.4824	.0000	.0000	1,271	.0000	.4824	.4824	.0000	.0000	1,261	.0000
40	.4914	.4844	.0070	.3720	1,27	.5470	.4923	.4914	.0009	.0458	1,26	.8322
41	.4906	.4813	.0092	.4896	1,27	.4901	.4935	.4906	.0030	.1516	1,26	.7002
42	.5955	.5924	.0031	.2051	1,27	.6542	.6623	.5955	.0668	5.1434	1,26	.0319*
43	.5264	.5258	.0007	.0380	1,27	.8469	.5325	.5264	.0061	.3369	1,26	.5666
44	.5377	.5377	.0000	.0000	1,271	.0000	.5377	.5377	.0000	.0000	1,261	.0000
45	.5080	.4985	.0095	.5216	1,27	.4764	.5146	.5080	.0066	.3522	1,26	.5580
46	.5552	.5430	.0122	.7408	1,27	.3970	.5722	.5552	.0169	1.0293	1,26	.3197
47	.4898	.4898	.0000	.0004	1,27	.9836	.4986	.4898	.0089	.4598	1,26	.5037
48	.4998	.4813	.0184	.9958	1,27	.3272	.5112	.4998	.0115	.6095	1,26	.4420
49	.4942	.4857	.0085	.4554	1,27	.5055	.5135	.4942	.0193	1.0314	1,26	.3192
50	.5071	.4871	.0200	1.0974	1,27	.3041	.5095	.5071	.0024	.1291	1,26	.7223
51	.5580	.5576	.0004	.0263	1,27	.8724	.6001	.5580	.0421	2.7340	1,26	.1105
52	.5889	.5883	.0005	.0354	1,27	.8522	.6623	.5889	.0735	5.6551	1,26	.0250*
53	.5022	.4953	.0069	.3761	1,27	.5448	.5203	.5022	.0180	.9772	1,26	.3320
54	.5063	.4974	.0089	.4891	1,27	.4903	.5120	.5063	.0057	.3049	1,26	.5856
55	.5368	.5318	.0050	.2896	1,27	.5949	.5427	.5368	.0060	.3392	1,26	.5653
56	.5002	.4886	.0116	.6258	1,27	.4358	.5033	.5002	.0031	.1612	1,26	.6913
57	.5282	.5116	.0165	.9455	1,27	.3395	.5347	.5282	.0065	.3641	1,26	.5515
58	.4877	.4813	.0064	.3354	1,27	.5673	.4912	.4877	.0036	.1820	1,26	.6732
59	.5445	.4924	.0521	3.0860	1,27	.0903	.5640	.5445	.0195	1.1639	1,26	.2906
60	.5121	.4957	.0164	.9057	1,27	.3497	.5357	.5121	.0236	1.3188	1,26	.2613
61	.5405	.5351	.0053	.3143	1,27	.5797	.5430	.5405	.0025	.1447	1,26	.7067
62	.5116	.5090	.0026	.1435	1,27	.7078	.5237	.5116	.0121	.6603	1,26	.4238

TABLE 31 PAGE 1

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 7 TOTAL

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
1	.7255	.7185	.0070	.6851	1,27	.4151	.7416	.7255	.0161	1.6183	1,26	.2146
2	.7270	.7270	.0000	.0000	1,271	.0000	.7370	.7270	.0100	.9859	1,26	.3299
3	.7037	.7026	.0011	.1033	1,27	.7503	.7168	.7037	.0132	1.2079	1,26	.2818
4	.6943	.6930	.0014	.1206	1,27	.7310	.6982	.6943	.0039	.3378	1,26	.5661
5	.7125	.7125	.0000	.0000	1,271	.0000	.7279	.7125	.0154	1.4735	1,26	.2357
6	.6996	.6863	.0134	1.2011	1,27	.2828	.7069	.6996	.0072	.6424	1,26	.4301
7	.6970	.6906	.0064	.5680	1,27	.4576	.7068	.6970	.0098	.8706	1,26	.3594
8	.7245	.7151	.0093	.9147	1,27	.3474	.7340	.7245	.0096	.9356	1,26	.3423
9	.6881	.6881	.0000	.0000	1,271	.0000	.6881	.6881	.0000	.0000	1,261	.0000
10	.7198	.7085	.0113	1.0883	1,27	.3061	.7200	.7198	.0002	.0149	1,26	.9039
11	.6973	.6973	.0000	.0001	1,27	.9925	.7017	.6973	.0044	.3832	1,26	.5413
12	.7087	.6946	.0141	1.3041	1,27	.2635	.7112	.7087	.0025	.2286	1,26	.6366
13	.7017	.6988	.0029	.2605	1,27	.6139	.7059	.7017	.0042	.3669	1,26	.5499
14	.7498	.7347	.0150	1.6238	1,27	.2134	.7518	.7498	.0021	.2160	1,26	.6460
15	.6846	.6846	.0000	.0000	1,271	.0000	.6846	.6846	.0000	.0000	1,261	.0000
16	.7449	.7449	.0000	.0000	1,271	.0000	.7625	.7449	.0176	1.9313	1,26	.1764
17	.6904	.6904	.0000	.0000	1,271	.0000	.6904	.6904	.0000	.0000	1,261	.0000
18	.7018	.7018	.0000	.0000	1,271	.0000	.7018	.7018	.0000	.0000	1,261	.0000
19	.7378	.7217	.0161	1.6566	1,27	.2090	.7705	.7378	.0328	3.7113	1,26	.0650
20	.6898	.6898	.0000	.0014	1,27	.9708	.6898	.6898	.0000	.0000	1,261	.0000
21	.7142	.7130	.0012	.1120	1,27	.7404	.7867	.7142	.0725	8.8352	1,26	.0063*
22	.7043	.6979	.0064	.5862	1,27	.4505	.7111	.7043	.0068	.6133	1,26	.4406
23	.7126	.7042	.0084	.7884	1,27	.3824	.7127	.7126	.0001	.0083	1,26	.9280
24	.7213	.7202	.0011	.1064	1,27	.7468	.7239	.7213	.0025	.2393	1,26	.6288
25	.7490	.7219	.0271	2.9201	1,27	.0990	.7491	.7490	.0001	.0066	1,26	.9360
26	.6998	.6856	.0143	1.2846	1,27	.2670	.7063	.6998	.0065	.5752	1,26	.4550
27	.7186	.7186	.0000	.0000	1,271	.0000	.7186	.7186	.0000	.0000	1,261	.0000
28	.7186	.7186	.0000	.0000	1,271	.0000	.7186	.7186	.0000	.0000	1,261	.0000
29	.7186	.7186	.0000	.0000	1,271	.0000	.7186	.7186	.0000	.0000	1,261	.0000
30	.6867	.6867	.0000	.0000	1,271	.0000	.7052	.6867	.0185	1.6312	1,26	.2128
31	.7063	.6921	.0142	1.3029	1,27	.2637	.7214	.7063	.0152	1.4158	1,26	.2448

TABLE 31 PAGE 2

CONTRIBUTIONS OF THE TPOR VARIANCE AND THE TPOR SQUARED VARIANCE AS PREDICTORS OF ACHIEVEMENT FOR MATH SCALE 7 TOTAL

	VARIANCE						SQUARED VARIANCE					
TPOR	RSF	RSR	RSD	F	DF	P	RSF	RSR	RSD	F	DF	P
32	.7045	.6919	.0126	1.1536	1,27	.2923	.7088	.7045	.0043	.3832	1,26	.5413
33	.7608	.7608	.0000	.0029	1,27	.9573	.7620	.7608	.0012	.1322	1,26	.7191
34	.7225	.7215	.0011	.1025	1,27	.7513	.7318	.7225	.0093	.9036	1,26	.3506
35	.6974	.6836	.0138	1.2328	1,27	.2767	.7272	.6974	.0298	2.8370	1,26	.1041
36	.7571	.7324	.0247	2.7442	1,27	.1092	.7631	.7571	.0060	.6634	1,26	.4228
37	.7571	.7324	.0247	2.7442	1,27	.1092	.7631	.7571	.0060	.6634	1,26	.4228
38	.7088	.7083	.0005	.0419	1,27	.8394	.7104	.7088	.0017	.1494	1,26	.7022
39	.7080	.7080	.0000	.0000	1,271	.0000	.7080	.7080	.0000	.0000	1,261	.0000
40	.7167	.7159	.0008	.0735	1,27	.7883	.7209	.7167	.0042	.3912	1,26	.5371
41	.7032	.7032	.0000	.0002	1,27	.9876	.7183	.7032	.0151	1.3965	1,26	.2480
42	.7177	.6864	.0313	2.9922	1,27	.0951	.7453	.7177	.0276	2.8142	1,26	.1054
43	.6963	.6928	.0035	.3103	1,27	.5821	.7150	.6963	.0187	1.7036	1,26	.2033
44	.7011	.7011	.0000	.0000	1,271	.0000	.7011	.7011	.0000	.0000	1,261	.0000
45	.6919	.6894	.0025	.2197	1,27	.6431	.6924	.6919	.0004	.0373	1,26	.8484
46	.7197	.6942	.0255	2.4551	1,27	.1288	.7223	.7197	.0026	.2464	1,26	.6238
47	.6848	.6847	.0001	.0093	1,27	.9239	.7133	.6848	.0285	2.5834	1,26	.1201
48	.7005	.7002	.0003	.0267	1,27	.8714	.7203	.7005	.0198	1.8375	1,26	.1869
49	.7111	.7050	.0060	.5615	1,27	.4602	.7137	.7111	.0027	.2422	1,26	.6268
50	.6997	.6986	.0010	.0929	1,27	.7628	.7075	.6997	.0078	.6973	1,26	.4113
51	.6993	.6871	.0122	1.0927	1,27	.3052	.7340	.6993	.0347	3.3950	1,26	.0768
52	.7246	.7129	.0117	1.1486	1,27	.2933	.7487	.7246	.0241	2.4892	1,26	.1267
53	.7334	.7334	.0000	.0002	1,27	.9883	.7508	.7334	.0174	1.8174	1,26	.1893
54	.7067	.6950	.0117	1.0812	1,27	.3076	.7070	.7067	.0003	.0227	1,26	.8813
55	.7058	.6881	.0178	1.6330	1,27	.2122	.7658	.7058	.0600	6.6560	1,26	.0159*
56	.7359	.7001	.0358	3.6584	1,27	.0664	.7371	.7359	.0012	.1183	1,26	.7336
57	.6918	.6827	.0092	.8043	1,27	.3777	.6919	.6918	.0000	.0005	1,26	.9827
58	.7438	.7432	.0006	.0660	1,27	.7993	.7451	.7438	.0013	.1313	1,26	.7200
59	.7066	.6839	.0227	2.0927	1,27	.1595	.7126	.7066	.0060	.5453	1,26	.4669
60	.7406	.6949	.0457	4.7529	1,27	.0381*	.7477	.7406	.0071	.7314	1,26	.4003
61	.7190	.6960	.0229	2.2013	1,27	.1495	.7193	.7190	.0003	.0281	1,26	.8682
62	.6967	.6934	.0033	.2965	1,27	.5906	.6968	.6967	.0001	.0074	1,26	.9322

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